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Products Finishing

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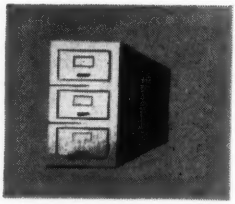

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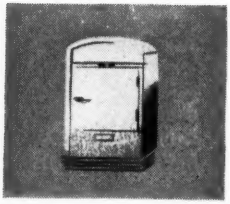

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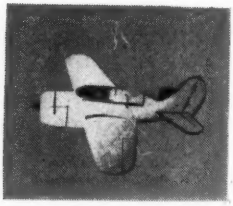

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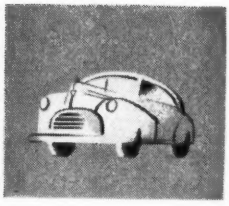

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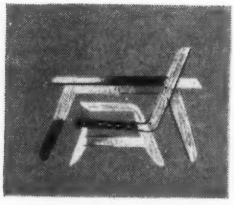

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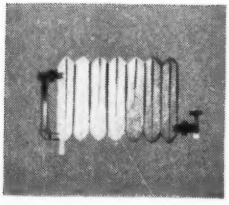


metallic paints

PRODUCTS finishing

Have you made reservations?

The Industrial Finishing Exposition, which is scheduled for the week of June 23 in Detroit's Convention Hall, promises to be the greatest event of its kind ever to be held under the sponsorship of the American Electroplaters' Society. According to the latest reports, a large portion of display space in Convention Hall has been already reserved by manufacturers and suppliers of equipment and materials for the metal-finishing industry. Many of the displays of finishing equipment will be in operation, thus providing those who are actively engaged in finishing operations and the general public with the opportunity to view the newest developments in the processing and finishing of metal products.

The American Electroplaters' Society, whose headquarters will be located in the Hotel Statler, will hold five technical sessions, covering a wide range of subjects of great interest to electrochemists and process engineers. The subjects to be covered will embrace many advancements made in the electroplating field as a direct result of developments brought about through experience obtained in war production activities. A representative group of manufacturers of plated articles has reserved space at the Statler for the display of a wide range of finished products.

Plan now to attend this highly educational get-together, which promises to be the largest and most interesting which the Society has sponsored to date. On page 88 of this issue of PRODUCTS FINISHING you will find a complete set of instructions for making reservations for both the convention and the exposition. The June issue of this magazine will contain the complete educational program and full details of the exposition, as well as many other features of the convention.

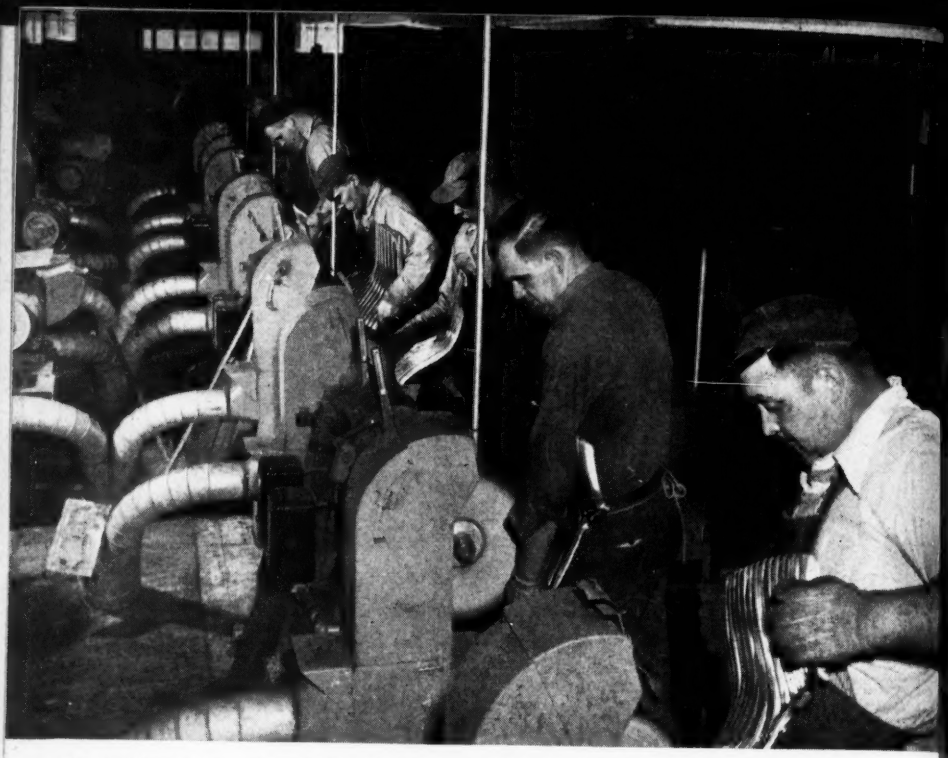


Fig. 1—View of one of the buffing lines along which zinc alloy die castings are manually buffed prior to plating

Plating Methods at Gerity-Michigan Plants

By W. T. WALSH

THE Gerity-Michigan Die Casting Company is one of the most self-sufficient organizations of its type in the country, inasmuch as it manufactures die castings in its Detroit plant and plates them in its Adrian units. Bathroom fixtures and certain automobile parts constitute a large part of the volume of items plated in Adrian.

Most of the die castings made in the Detroit plant are plated and polished in its two Adrian units. Operations in the latter plants are definitely in the close precision class, due to the strict observance of the process speci-

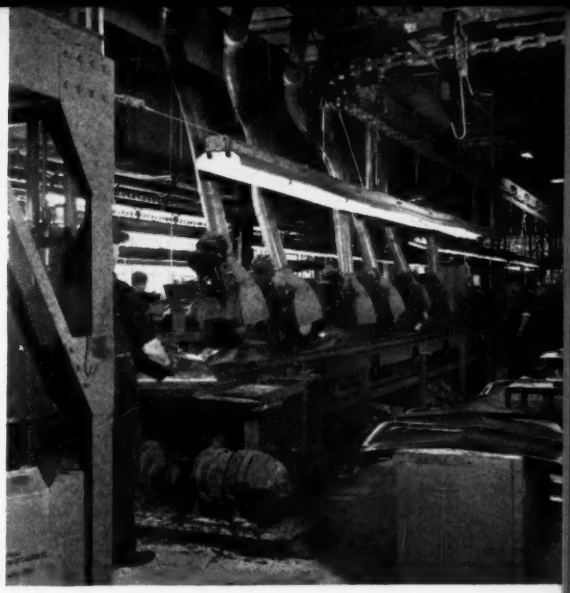


Fig. 2—Straight-line polishing machine in which castings are placed on fixtures located on a conveyor that advances the work under six buffing wheels, each set to buff a particular area

fications set up by the client. These vary only in accordance with the type of item to be plated.

Zinc alloy die castings comprise the bulk of the company's output. The smooth surfaces produced by the die-casting process are so fine that a minimum of polishing and buffing are required before plating. Much of the polishing is done with canvas wheels on which grit is glued. Some operations, however, are done on abrasive belts, many of which are narrow and are run over a pulley at the end of an arm that permits the belt to be passed through openings and reach surfaces that cannot easily be handled by a wheel. This is especially applicable in the instance of horn ring interiors. The finest grits, usually from 180 to 220, are used in performing the polishing operations.

Fig. 3—Plating setup for handling 20,000 flashlight reflectors per day. Tanks located along three walls of the small room are used for anodic cleaning, copper plating (tanks at right and far end), and subsequent silver plating (tanks at left).

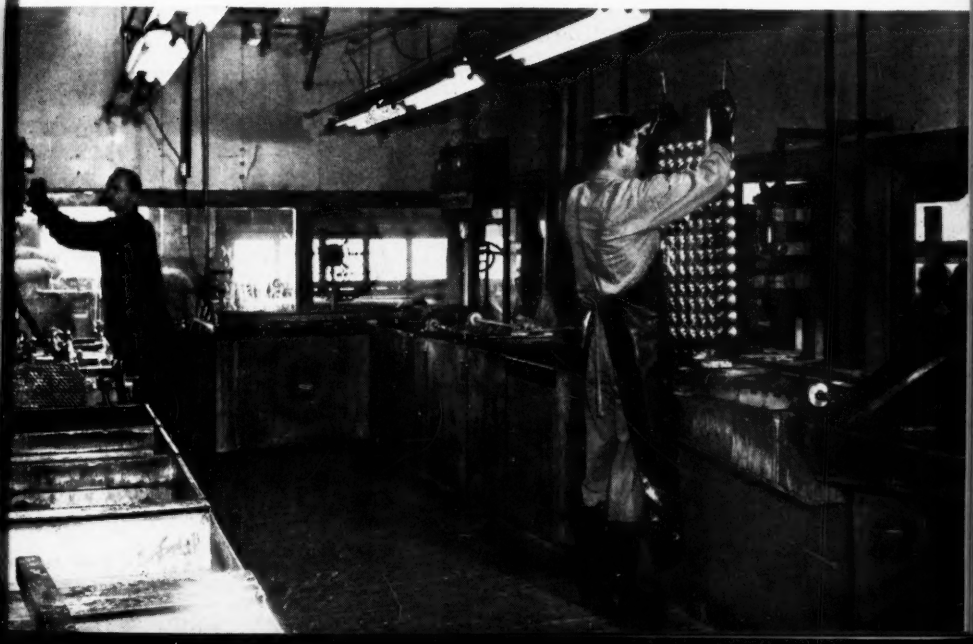


Fig. 4 — At this station, silver plated reflectors are unracked and placed on a belt type conveyor along which color buffing of the plating is done.

Stitched muslin wheels dressed with stick compounds containing tripoli or a similar abrasive are used for most of the buffing. Although the irregular shapes of certain plated products require the operation to be performed manually, machines are available for handling such work on a quantity basis.

Referring to Fig. 1 with several wheels set up, one for each phase of the polishing operation, the work, in many instances, passes from one to another until all surfaces have been treated. Acme chucks or heads that permit the casting to be rotated are used in the buffing of circular surfaces. With these, the work can be fed against the wheel, thus accomplishing the job in several steps or movements. Certain special heads bring the periphery of one or more castings against the buff, while others bring the face of the casting against the wheel.

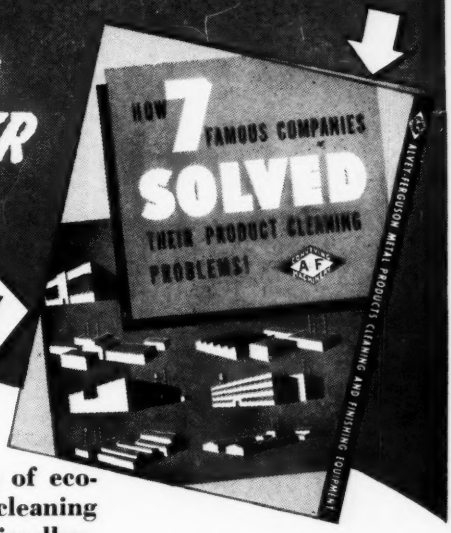
The dial type of machines used in semi-automatic buffing are equipped with holders that rotate the work as the dial advances under the buffs. These are

Fig. 5—After color buffing, the plated reflectors are placed in card racks of the type shown herein and are sprayed with clear lacquer to prevent tarnishing.

7 SOLUTIONS

TO METAL PRODUCTS CLEANING PROBLEMS

described in this NEW FOLDER



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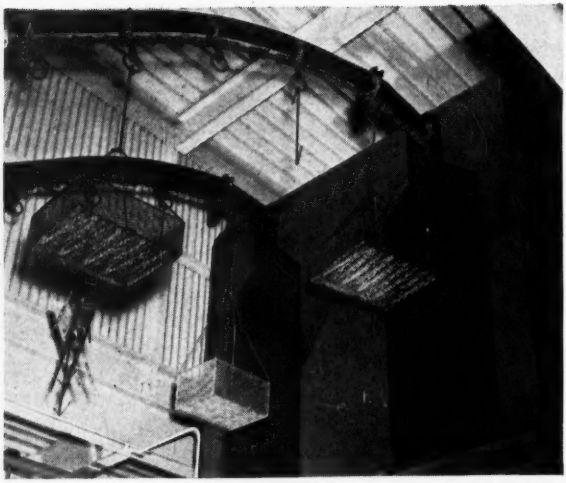

Fig. 6—After inspection, buffed die castings are conveyed on hooks or in baskets through a degreaser.

used in such instances as faucet handle buffing. The work is loaded and unloaded at one point, while at another station it is passing under one of the buffing wheels which treats specific surfaces. Buffing compound sticks are applied to some of the wheels automatically.

Two circuits are sometimes made when the casting must be turned over and a second operation performed. In such cases, the work is merely passed onto another machine which duplicates the operation by buffing the second side of the object. Faucet handles are usually buffed in this manner.

As shown in Fig. 2, straight-line polishing machines are used for flat au-

Fig. 7—Along this line, castings coming from the degreaser are placed on racks by workers wearing gloves to avoid finger and perspiration marks on the pieces.

RECTIFIER *Facts*.. Not Fiction

Wagner-Tiedeman Electroplating Rectifiers put other sources of direct current in the horse-and-buggy class. Here are features important to electroplaters who like to keep "an ear to the ground and an eye to the future" . . .

1. FLEXIBILITY

Equipment can be shifted where needed. Eliminates costly guesswork in estimating power demands. • First installation simple and inexpensive. Expand as needed by paralleling into system. • Units quickly replaceable in case of accident. Eliminates wrecking single unit high amperage system. Unit rectifiers easily shifted in emergency.

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Lower starting loads means smaller feed lines. • Light weight permits hanging or stacking to save floor space. • No expensive foundations required. • Small units may be tucked away in otherwise wasted corners.

3. SIMPLE SERVICING

Anyone can service the three major components, fans, transformer and selenium stacks. Stacks fused, everything visible. • Parts and factory service within 24 hours. No plant tie-up for days or weeks for repairs to single unit high amperage system.

4. LOW MAINTENANCE COSTS

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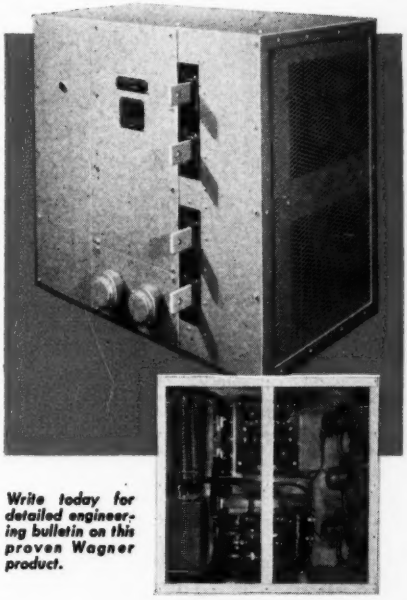
5. LOW OPERATING COSTS

Wagner-Tiedeman Rectifier produces low voltage high amperage Direct Current from an Alternating Current source for less money.



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FEATURES

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SPECIFICATIONS

Output, 6 v. at 1500 amp., 12 v. at 750 amp., Input, 220/440 v. 60 cycle 3 ph., power drain approximately 12 Kw. at full load. 34" high, 36" long, 22" wide, floor area 5.5 sq. ft. Weight, approximately 500 lbs. Other voltages and current capacities available.

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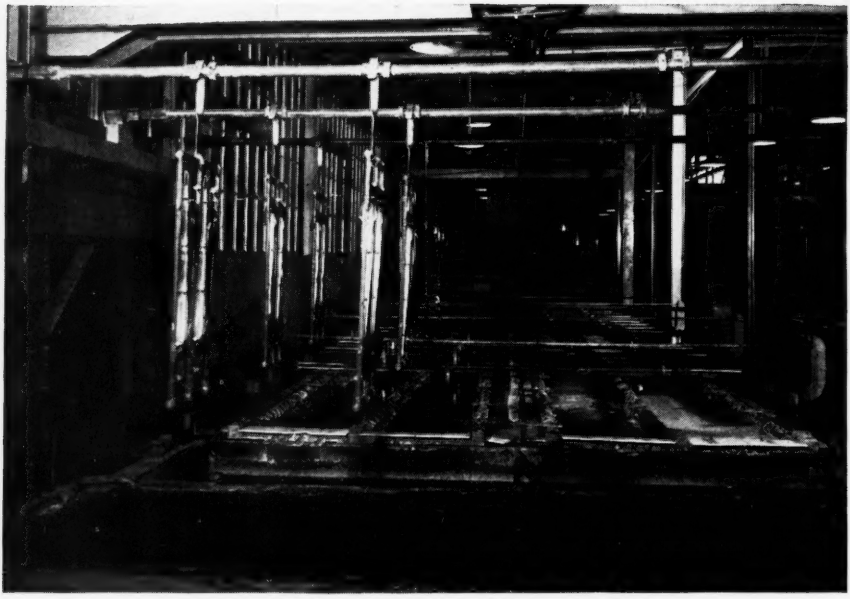


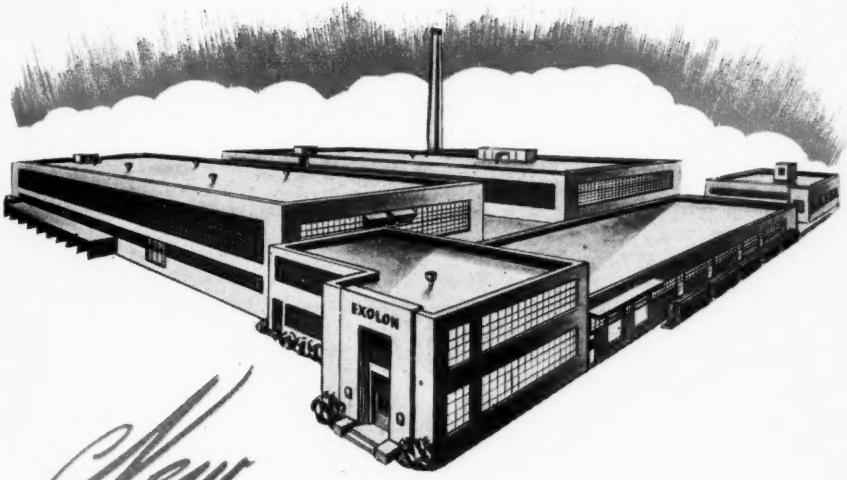
Fig. 8—View of one of the conveyorized lines for automatic copper and nickel plating. After cleaning and etching, the racked castings, hanging from the conveyor bars, enter the copper plating tank.

tomobile grille sections and similar types of castings. The work is placed on wood fixtures that enter the machine at one end and gradually advance by means of a chain along the bed, moving in succession under several wheels, each set to buff a specific part of the surface. When the work has traversed the length of the machine, it is unloaded and returned on a conveyor to the loading end.

One of the most efficient setups in the Adrian plants is a conveyor belt arrangement for buffing and polishing 20,000 flashlight reflectors a day. The reflector surface of each of these has such marked smoothness that merely buffing to make ready for plating is necessary. The castings are first tapped under a drill press and then placed on a conveyor belt, along each side of which are several operators with small portable power-driven buffing wheels that fit into the concave surfaces. Each of the reflectors is held on a hand arbor which slowly rotates the work as the operator performs a buffing operation on same.

The reflector surface next to the rim is buffed first; the inner, or lower part, is buffed on the second wheel. An exceedingly high polish, called "coloring," is attained in the final buffing. After each of the individual operations, the castings are returned to the conveyor belt for inspection purposes and then placed on a rack for plating.

The flashlight reflector, because it requires a silver plating, is handled in large volume in a separate plating setup, as shown in Fig. 3. The first step is to soak the casting in a soap solution and then anodically clean it in a proprietary alkaline solution of 190 degrees F. Next comes a cold rinse, a



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short dilute acid dip to etch the surface, and then another cold rinse. The casting is now ready to receive the copper plating that is applied before the silver plate.

Copper strike is applied in only a few seconds in an ordinary cyanide solution, the purpose of which is to prevent immersion plating in the next bath, which is of the Unichrome high-speed copper type. The bright copper would lack proper adherence if immersion coating occurred. The copper plating operation requires four minutes at approximately 100 amperes per square foot, with the solution being agitated by air and held at a temperature of 130 degrees F. Three cold dip rinses follow the bright copper plating operation to exclude and keep all bright copper plating solution out of the silver strike bath in which the work is next immersed.

After the silver strike, the racks are shifted to oscillating bars in the final silver plating solution, where they are maintained eight minutes at 15 amperes per square foot. The bath is at room temperature. Three cold dip rinses and a soap rinse come next, followed by a hot water rinse and blow-drying with compressed air. After drying, the plated castings are unracked and placed on a belt type conveyor, as shown in Fig. 4.

As a casting moves along on the conveyor belt, each of its reflector surfaces is color buffed on small wheels treated with silver rouge stick. After this, each reflector is inspected and placed in a hole of a packing card, which also serves as a tray, as shown in Fig. 5. When the card is filled, it is moved to a spray booth where a coat of clear lacquer is applied to prevent the silver from tarnishing. Following the lacquer spraying operation, the tray of reflectors is set aside

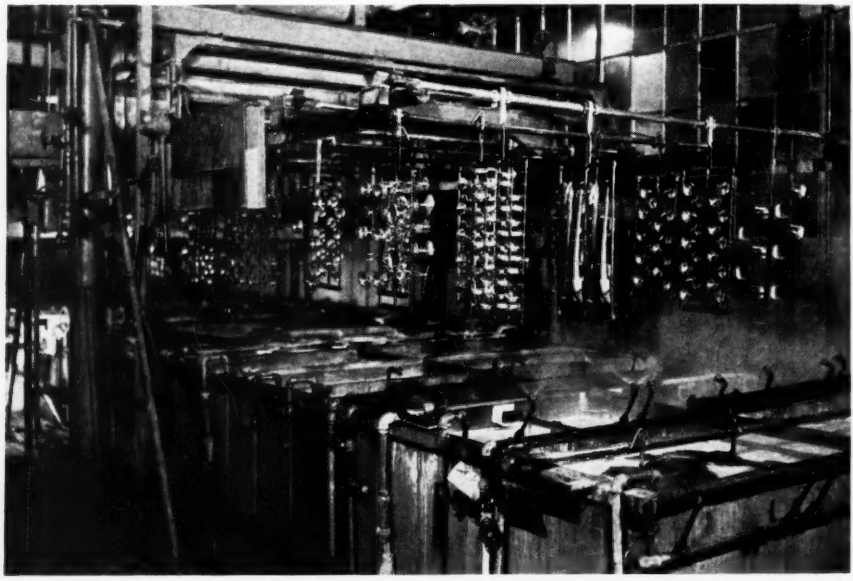

Fig. 9—Another view of copper-nickel line showing one of the tanks wherein a fine high pressure spray rinse is applied to copper plated parts

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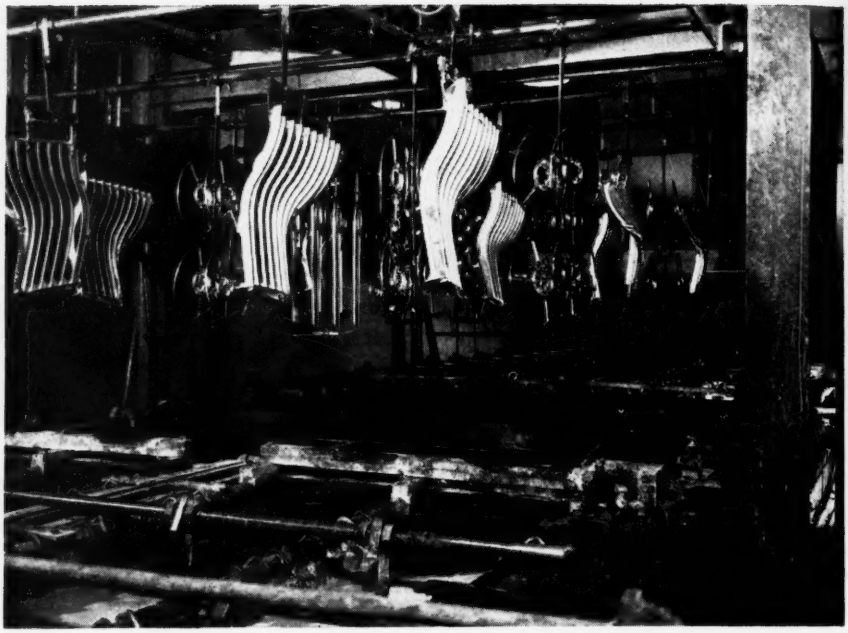

Fig. 10—Intermediate station along copper-nickel line where racked parts leave the copper plating tank, are rinsed, and then enter the nickel plating tank by means of an automatic conveyor

to dry and then packed and made ready for shipment.

Larger castings plated at the Gerity-Michigan plants in Adrian are handled in various ways. All of the operations are highly mechanized. After passing the inspection that follows buffing, many of the large parts are hung from hooks on a monorail chain. Smaller parts are frequently placed in metal baskets on the same chain as shown in Fig. 6, and are conveyed through a standard degreasing solution in four stages—vapor, liquid spray, vapor, and then another liquid spray. Hot trichloroethlyene is used in this cleansing operation.

Following degreasing, parts are carried on the conveyor along the racking line and are removed and placed in plating racks, especially designed for individual parts. Racks are hung from pipe supports and, when loaded, are placed back on the chain conveyor for transfer to the plating lines. To avoid perspiration marks, gloves are used by all workers in this department, as illustrated in Fig. 7. Plating racks are coated with Bunatol stop-off lacquer.

In the Adrian main plant of Gerity-Michigan are three major plating lines, two of which are mechanized. The third line is equipped with ordinary dip tanks, which is used mostly for the handling of parts that require either heavier or lighter plating than is done on the two mechanized lines which handle plating operations where coatings range in thickness from 0.0008 to 0.001 inch.

Racks of parts on the copper-nickel line are first given a short soak in a hot soap solution and then moved into

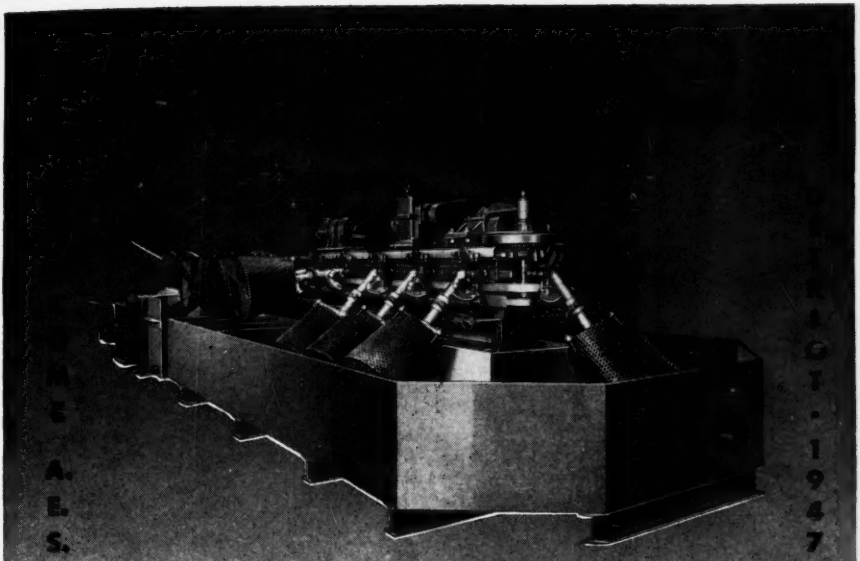

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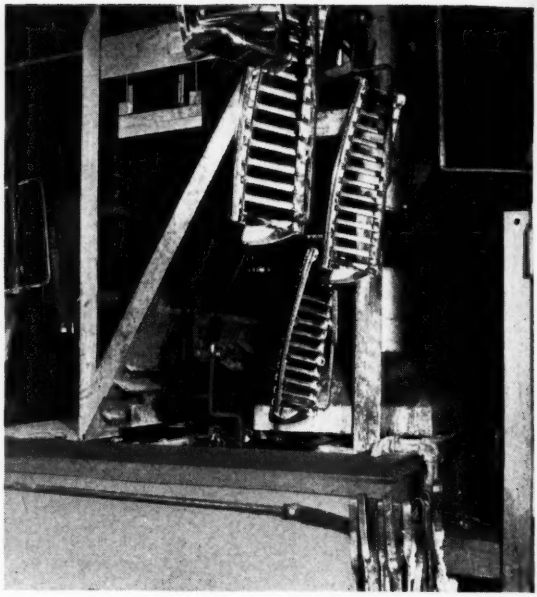
Fig. 11—View of chrome plating line showing racks of castings hanging from a Lasalco conveyor and about to enter the first tank in the line for cleaning



an anodic cleaning tank filled with a hot proprietary alkaline cleaner, after which comes a rinse in circulating water. Next, the bar conveyor carries the racks into a dilute sulphuric acid to etch surfaces for a period of 30 seconds. This is followed by a cold rinse and brief dips in two tanks, each of which applies a copper strike from a customary cyanide solution at 120 degrees F. to eliminate the need for immersion plating in the bright copper tank.

Following subsequent cold rinses, the racked parts, as illustrated in Fig. 8, enter the bright copper bath which is agitated by air. Plating is done in ten minutes at a 100 ampere per square foot current density, with the solution at 130 degrees F. This procedure results in a copper plating of approximately 0.0003 to 0.0004 inch thick and is followed by a spray and dip rinse in cold water (see Fig. 9.) A short dip in dilute sulphuric acid and another water rinse take place before

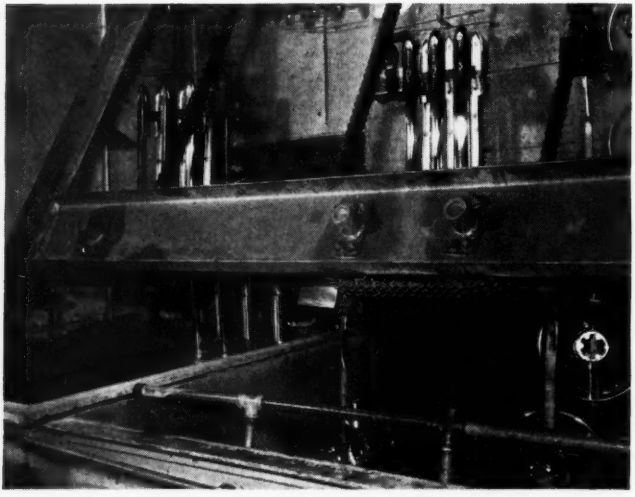


Fig. 12—Another view of chrome plating line showing dip and spray rinse tanks, together with several racks of castings hanging from conveyor

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Fig. 13—Row of spray booths in department where enamel is sprayed on parts of castings which have already been plated. One of the masks through which fill-in spraying is performed is shown in the foreground.

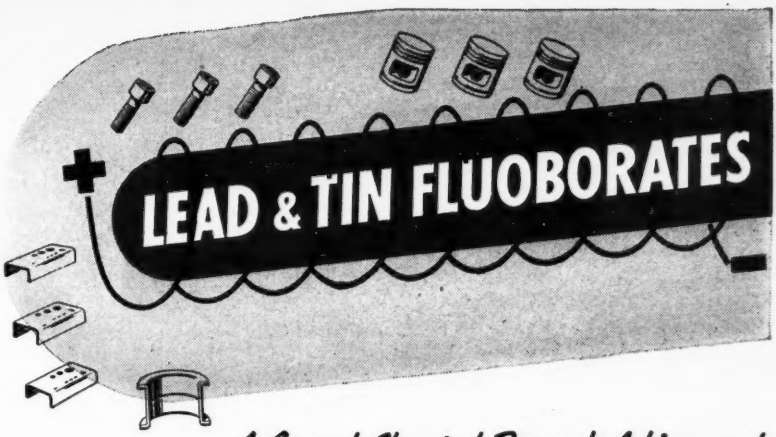
the parts enter the nickel plating tank (see Fig. 10).

In the nickel plating process, the parts are held on racks that are oscillated vertically. They are advanced the full length of the tanks in 20 minutes. The nickel plating bath is operated at 130 degrees F. Current density is 45 amperes per square foot, which results in a nickel plating of from 0.0005 to 0.0007 inch thick. The plating operation is followed by two cold water dip rinses. Parts are then ready for the chrome plating line unless some special buffing must be done on certain parts on which the nickel is not uniformly bright.

After the parts are transferred to another conveyor on the chrome plating line, they move first into a tank containing a cleaning solution of sodium cyanide and caustic soda (Fig. 11) where they remain for 15 seconds. Referring to Fig 12, three rinses, including a spray, dip, and another spray, are given before the parts enter the tanks for chromium plating, which contain chromium sulphate. They remain in these tanks for two minutes at a 2 to 4 volts potential. The temperature in the chromium plating tanks, which are lined with vitreous bricks, is held automatically at 110 degrees F. by a coil through which circulates steam or cold water. When the end of the chromium tank has been reached, the parts are given a fine water spray as the racks are elevated, with the water drainage flowing back into the tank to reduce dragout losses.

After the chromium plating operation, the parts are given three rinses; the first is in cold water that is agitated by air and the second in a cold high pressure spray. The third rinse is in hot water agitated by air. The warmth of the part, caused by the hot water, aids in the drying that is the next step in sequence. This is done as the conveyor carries the parts to a hot air forced draft dryer. The racks are then returned to the loading end of the chrome plating line where they are removed and the parts unracked and placed on two belt conveyors for inspection. Occasionally, when a part is not plated brightly enough to meet the company's standards, it is subjected to additional buffing.

Castings to be enameled an certain areas are sent to the paint room where either air-drying lacquer, or enamel



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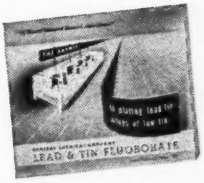

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designed especially for adherence to plated surfaces is sprayed on the surfaces, as shown in Fig. 13. Masks are used to cover all areas except those to be enameled.

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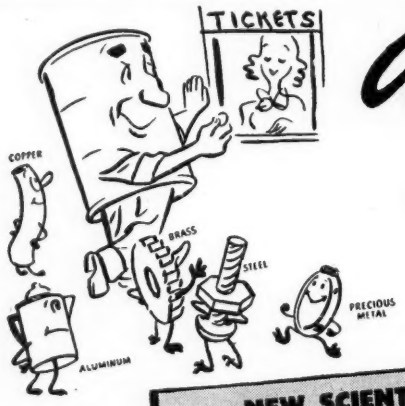

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Barrel Finishing of Metal Products

Part 9—The Relation of Barrel Finishing and Polishing in General Production

By H. LEROY BEAVER

Barrel Finishing Consultant
Lansdale, Pennsylvania

ALMOST from the very beginning of the publication of these discussions on barrel finishing procedure, methods, and materials, requests have been made for information concerning the application of barrel finishing procedure as contrasted with operations, to produce equivalent results, performed with hard wheels, set-up wheels, or loose or sewed buffs set up with a wide variety of abrasive compounds or compositions. In simpler words: the broad question of barrel finishing versus polishing and buffing.

We have tried for a very long time to set up some figures which would represent, at least with a reasonable degree of accuracy, the ratio of one to the other. First, of course, we must start with the assumption that we have a total of 100 per cent of parts on which to base our conclusions. However, in the very beginning, we must restrict that 100 per cent to the class of parts that would come under a general classification of a type or kind that would lend themselves to individual handling; that is, parts which any operator could so manipulate with his hands either against a wheel or perhaps in a barrel and disregard heavier parts that, if susceptible to barrel finishing at all, would have to be handled on the basis of "one at a time."

Of the entire production in the entire country of the type of parts we plan to discuss, this is the 100 per cent. Of this total, we can immediately cancel out a full 60 per cent. This 60 per cent covers a broad category and runs the full gamut of stampings, forgings, and castings in both ferrous and nonferrous metals. All of you have seen parts which, in their preparation for assembly, require little more than facing off parting flanges or the remainder of gates from castings or irregularities. These operations are generally performed with hard wheels to provide for what might be termed a slight dressing operation. Following this and especially in the case of metal stampings, we have a wide variety of parts that might be termed components of a general assembly which require nothing more than the operations of blanking and forming. They are then ready for assembly without the need for any further operations.

We have just passed through, or perhaps are at least within viewing distance of the end of a four-year fetish on operations which have been termed variously burring or deburring. Recently, we were making a survey of barrel finishing possibilities in a plant manufacturing agricultural equipment, and discovered that part after part that needed no such things as "final" finishing actually being so finished. The finishes neither added to the appearance nor to the utility of the finished assembly. Consequently, we asked the manufacturer, "Why all this unnecessary waste of time and effort?" He answered, "Well, our biggest competitor finishes all his parts in just this way." The only comment we could offer was to ask him whether, if this biggest competitor would take it upon himself to walk over and leap into the reservoir we passed on our way over to his plant, would he consider that as a good and sufficient reason for him to do likewise.

Please understand that we do not in any sense suggest careless, slipshod or inadequate handling of any parts, but there is such a thing as putting first things first. The obligation of the manufacturer is to see to it that parts, especially those with which an operator may come in contact, have no projections of any kind that might cause injury by catching in clothing or injury to the hands of the operator. As we see the complete picture, the foregoing at least approximates the conditions under which the 60 per cent of parts may be kept in their proper classification. As we see it, there is not much point in processing any part beyond the point that enables it to serve the utilitarian purpose for which it is designed and intended to serve, regardless of whether the part be a casting, forging, or stamping.

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Next, we shall consider a group of parts that we may designate as 20 per cent of the whole production. Of this class of parts, the answer might well be "yes and no," since the determination as to whether they should be mass produced by barrel finishing or handled one at a time on wheels or buffs depends largely on the application of the finished part to the general assembly. In all of our small parts, we have varying degree of quality in a given class of parts. This we might best illustrate by an ordinary hinge or what is perhaps more properly termed a butt. This device, which you will find on every door that normally opens and closes and on lids that lift, presents a wider ramification than most any other part we can think of. A wide variation in quality exists between the ordinary strap hinge that one can find in the hardware department of most any 5 and 10 cent store. The hinge is simply blanked from strip steel, subjected a light barreling operation, and then assembled and ready for mounting. To hand finish parts of this classification would be foolish in the extreme and would add nothing to the utility of the device. Rather it would only tend to increase the selling price.

We come now to an entirely different hinge or butt for this time we require a device for assembly into a finely finished piece of cabinet work. Consequently, we go to the dealer in builders' hardware where we find beautifully designed and executed parts in brass and bronze, many ball bearing equipped and representing workmanship of the highest quality. Are these finished in barrels or should they be so finished in order to obtain the same finishes? They should not be barrel finished at all and equivalent finishes could not be obtained since it simply is not in the nature of an inanimate barrel finishing operation to accomplish anything of the sort.

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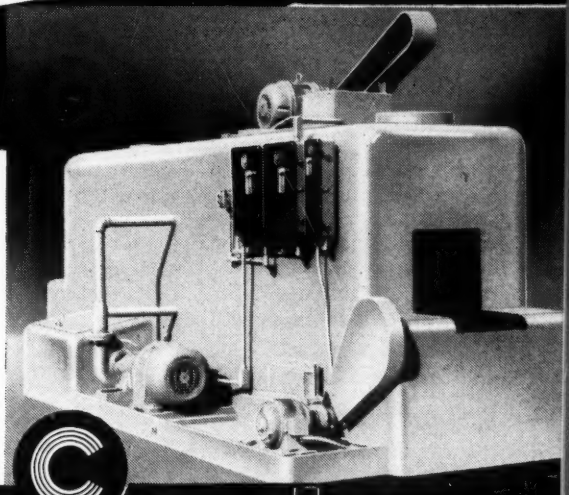

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quite another class of parts generally made of brass and coming under the general heading of finials. A finial is simply an ornamental design, sometimes cast and sometimes turned from stock. Many times in the cast form a wood screw is cast into the base for the purpose of mounting the finished part as an ornament to a wood assembly. Some finials can be nicely finished by the barrel procedure. However, those with the screw inserts can definitely not, since the brass is soft and the iron or steel screw is proportionately harder and threaded. Consequently, the threaded section will so contact and mar the brass surfaces as to render the final finish all but impossible and, even at best, inadequate.

Whether a part can or cannot be successfully finished in a barrel, after all, is a matter of decision for the manufacturer himself. We have often worked up demonstration finishes that we felt were completely adequate for the application only to have the manufacturer flatly reject them as not good enough. On the other hand, we have worked up other finishes which were completely unsatisfactory to us and from our light unmitigated failures. However, when they were submitted as the best that we could obtain with our limited knowledge, they were pronounced simply wonderful, and that if the manufacturers could obtain in regular production equally as good finishes they would be delighted.

This might seem to indicate that on both sides of the question of barrel finishing and polishing a field of decision exists that we might well term the hypercritical area. We are prone to judge finishes from our own knowledge of what we want them to be and, in so doing, we undertake the assumption that the purchaser of the product is as well informed in the arts of metal finishing as we are or at least should be. Where, as a matter of simple fact, what we might in our own mind term simply a "lousy" finish, to the uninitiated that same finish would be commented on as being absolutely "beautiful." Thus, in the entire 20 per cent of the whole field, at least a full 70 per cent of this section represents finishes that are obtained by the use of buffs, wheels, and compositions as distinguished from finishes obtained in barrels.

This brings us to the final 20 per cent to form the total of the 100 per cent representing all of the production of the country. The final section represents a broad line of metal products of every kind and character and for almost every application that one might imagine. The parts are of such a nature that they would readily lend themselves to barrel finishing procedure where completely adequate finishes could be obtained without too much of either production time or production expense. Yet, when we look back at the complete survey, we find

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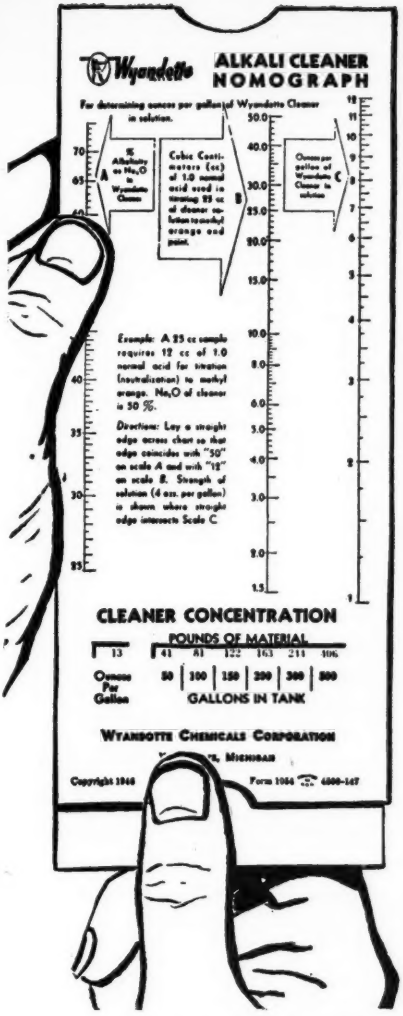

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that of this final group that should by all means be finished in barrels, hardly more than 2 per cent of such parts are being so finished. In the whole survey, we have diligently tried to take everything into consideration that fell within the scope of the survey itself, including the rough rattling or rumbling of castings in foundry barrels to break off sprues and parting fins and to loosen and shake out core materials and then through the whole field of acid pickling, galvanizing and tinning, spray painting, and the like in the matter of finishes.

We cannot help but come to the conclusion that much remains to be done in the way of a campaign of education to make clear to the manufacturer the possilities of barrel finishing procedure. In the overall picture, we have also kept in mind the facts of the electrodeposition of less metal and barrel finishing to cure porosity and harden the surface to resist wear with all the savings of production costs and production time. However, even with these considerations, the results are still the same.

To those of you who have followed the first and now the second series of these discussions, you will recall that a few months back we took the liberty of comparing the results of our research efforts to be not unlike a blind hog who, if turned loose in a woods, would manage to find a few acorns. Perhaps, we should now search through the woods to find this same blind hog and bring him out for another illustration. As represented by our figures, we would find that as between polishing and barrel finishing procedures, that this same blind hog, representing polishing would have his snout, both front feet, half of his stomach and at least one hind leg in the trough, while the balance of him would represent barrel finishing as it is practiced in our industry today.

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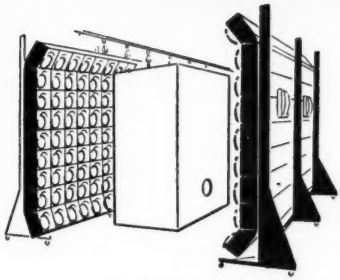
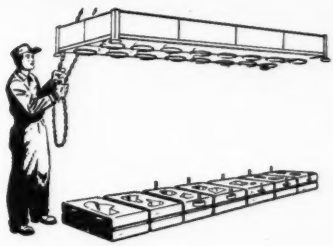


. . . bake a finish,



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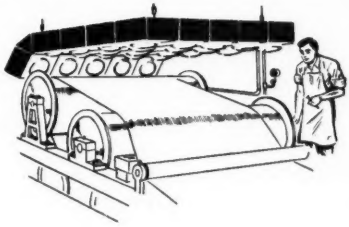

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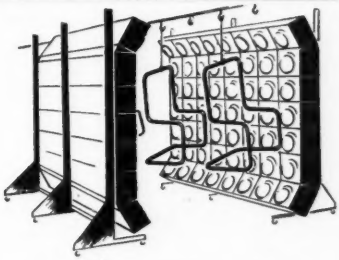

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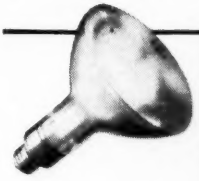

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Why should this be? Frankly, we just don't know. Perhaps, it is a case where barrel manufacturers and the advocates of barrel finishing procedure have not been sufficiently zealous in promoting their own equipment and conducting a more concerted campaign of providing information as to just what may and may not be expected from barrel finishing procedure as a whole. Sometimes, it seems to us as though there is too great a field of conflict in ideas between barrel manufacturers themselves. Such conflicts in ideas might be easily and quickly resolved if the barrel manufacturers would all get together in a general meeting for an exchange of views as to what could or should be recommended and what should not. This would provide for an immense area of clarification to the manufacturer who should be, but is not, now using the barrel finishing procedure.

As we have so often said before, we hold no brief for any barrelmaker whoever he may be or wherever he may be situated. All that we seek to do is to conduct as many experiments as our time will allow and in as many types and sizes of barrels and with the broadest variation in the selection of materials for experimental use. All of our American-made barrels, at least as far as it has been our privilege to see and use them, are well constructed, fairly priced, and will produce satisfactory results if their use is confined to the sizes and shapes and general character of parts for which they were intended.

One factor that we must mention and that has undoubtedly contributed to the confusion as to whether polishing or barrel finishing is to be used is that a manufacturer will examine illustrations of various types and sizes of barrels and the one that appeals to him from the point of design and general appearance is the barrel he will then order. If in placing the barrel in production, it does not do all that he hopes for he never blames himself but rather the barrelmaker who is tried and convicted in absentia and is permitted no defense.

Thus, may we ask you, the manufacturer, if and when you contemplate the installation of barrel finishing equipment, that you select the style of barrel that best suits your fancy, but before you order it, write a letter direct to the maker and tell him, not briefly but in complete detail, just what you plan to do, the kind of finishes you want to obtain, and the length of production time you can allow to permit the operations to be fitted into your production cost picture. The more complete information you give him, the better he will be able to make an analysis of your production requirements. If you will do this, then you have our assurance, speaking for that barrel manufacturer, that he will frankly lay all of the facts be-

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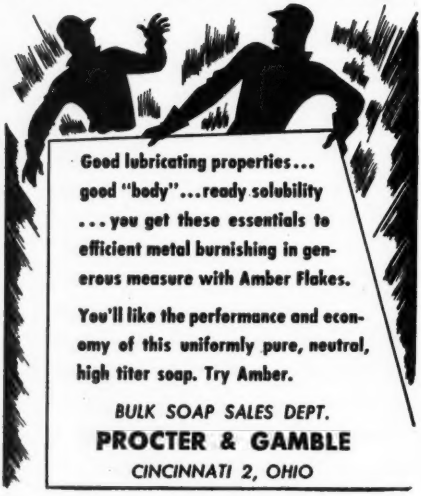

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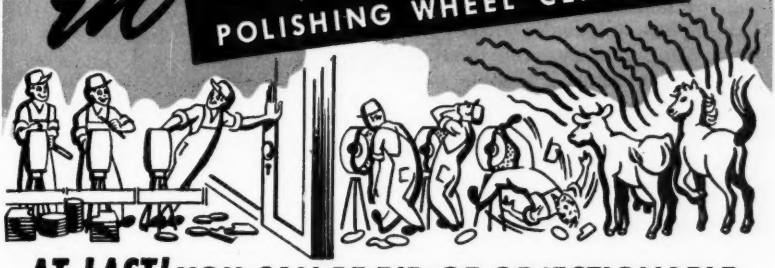

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fore you and help you to decide as to what is best to do. Whether it involves the sale or the loss of a sale of his particular type of equipment will not influence his decision, and don't be much surprised if he should tell you that in his own honest and candid opinion that you should not undertake the matter by barrel finishing at all but rather that you continue to use polishing methods as the best means for obtaining the finishes required for your parts. Simply because our barrel-makers are that kind of people accounts largely for all that we have been able to accomplish as we have worked along with them for many years on every conceivable type and size of barrels and for almost every barrel finishing application.

"Low Cost Deburring and Finishing with 'Honite' Abrasive Pebbles," a 12-page illustrated bulletin of particular interest to manufacturers of cast, stamped, and machined metal parts which require a final deburring or finishing process, has been released by the Minnesota Mining & Mfg. Co., Advertising Dept., St. Paul 6, Minn. The booklet tells how costs on one typical operation on an aluminum die casting were reduced 90 per cent as compared with the same work by hand. Also included are illustrations and descriptions of the various types and sizes of Honite and tips on how each is best used. Copy free upon request.

Udylite Compounds for the metal cleaning and finishing industries are discussed in a four-page folder prepared by The Udylite Corp., 1651 E. Grand Blvd., Detroit 11, Mich. Compounds covered include Anodex for electro-cleaning steel and copper; Dyclene "E" for zinc base die castings; Metalex "W" Special, a general purpose cleaner; Metex Burnishing Compounds; Metex Soak Cleaners; Rocheltex for copper plating; Durodex for steel and copper; Solvmax, a water emulsion spray cleaner; Metex Acid Additive; and Metex Pressure Spray Cleaners. Copy free upon request.

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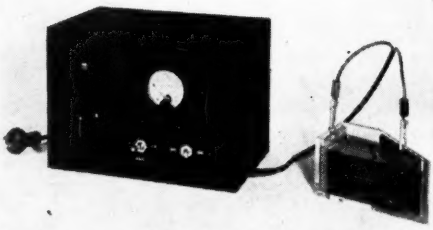

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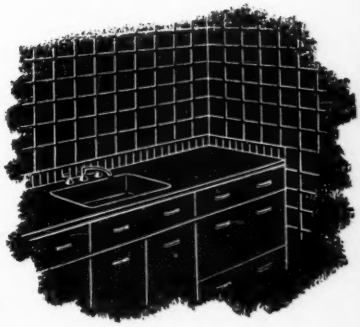

APPLICATION:

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Convection oven schedule—20 minutes at 300°F. Single bake. Ideal for infrared. (Optional schedules available.)

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LIQUID PLASTICS DIVISION
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CLEVELAND 3, OHIO

Finishing Clinic

Factors to Be Considered in Cleaning of Aluminum

By DR. ALLEN G. GRAY

THE production man in the finishing department should keep in mind that the proper cleaning of aluminum is of importance in ensuring the success of the final finishing operation. Proper cleaning of aluminum and its alloys is neither difficult nor expensive, provided the basic characteristics of the metal are understood and certain practices are followed. Cleaning may involve the complete removal of stamping and slushing oils, drawing compounds, paint markings, and general types of shop dirt found on the metal. Also, surface oxides should be removed prior to anodizing and spot welding for best results in these operations. Before electroplating on aluminum and its alloys, the surface must be given a special treatment after the cleaning operation. If the surface is not properly cleaned prior to this treatment, surface unevenness and poor plate adhesion may result. Proper cleaning is also essential in obtaining adherence of paint, lacquer, or enamel coatings.

If aluminum is to be left in the natural metal finish, any discoloration caused by oils or grease in the course of fabricating operations can be removed by washing the metal with an organic solvent. The chlorinated solvents used in commercial types of degreasers can be utilized for cleaning aluminum, provided care is exercised to prevent contamination of these solvents by moisture or decomposition inducing impurities.

The first step in the surface preparation of aluminum for electroplating is usually an alka-

A Monthly Digest on Current Technical Progress Indicating Significant Trends and Developments in the Finishing Industry

THIS MONTH . . . Factors to Be Considered in Cleaning of Aluminum . . . Clear Metal Lacquers Require Consideration in Selection and Application . . . Continuous Spray Cleaning and Pickling Useful for Porcelain Enameling . . . Advantages of the Infra-Red Baking . . . Some Possibilities of Latex-Dip Coatings . . . Determination of Thickness of Tin Coatings on Copper

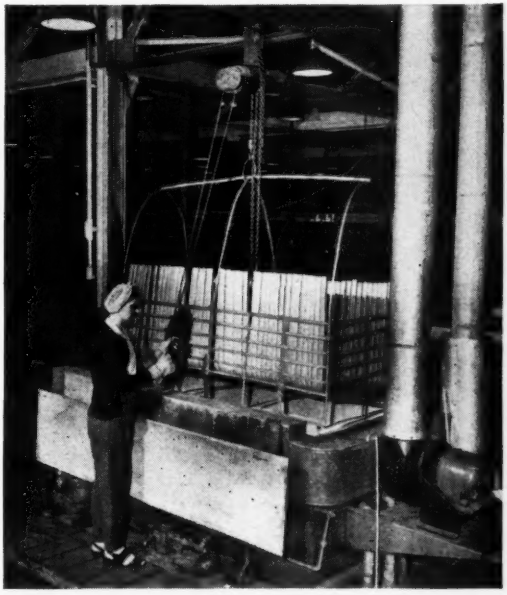
line cleaning treatment. One solution recommended for this purpose consists of a hot bath made up of sodium carbonate and trisodium phosphate in amount of 1 to 3 ounces per gallon of each. The cleaning procedure is usually followed by an appropriate pickle treatment just prior to the performance of plating operation.

To control the attack of highly alkaline cleaners on aluminum, an inhibiting agent is often added. The inhibitor is generally a material which combines with the aluminum surface to form a protective film which resists the dissolving action of the alkali. Such materials are usually silicates; sometimes, chromates, fluorides, silicofluorides, or organic materials are used. Because the inhibiting materials are not easily washed from the surface of the aluminum, it is advisable to follow the inhibited alkaline cleaning operation with a nitric acid wash. Cleaners improperly formulated with inhibitors may produce such a tenacious film as to defeat the purpose of the cleaner and render the process impractical.

The use of wetting agents in properly formulated cleaners will facilitate cleaning and aid in developing uniformity of etch. The wetting agents selected should be efficient, stable, and used in the proper concentrations. Soaps in general, should not be used as they tend to form insoluble aluminum s o a p s . Calcium and magnesium sequestering agents are desirable in aluminum cleaners to prevent the precipitation of hard water salts on the work. Wetting agents of a suitable type also aid in rinsing of the work.

In general, alkaline chemical treatments of aluminum surfaces for purposes of cleaning are confined to the use of hydroxides, carbonates, and phosphate. It is generally thought that the selection of alkaline cleaning agents which provide pH 12 or slightly under are desirable, provided they are properly balanced. Slight gassing during the cleaning period is generally beneficial because of the mechanical scrubbing action afforded. In addition, all components of the cleaner, when dried from a thin layer solution, should be easily redissolved and removed in the rinse (see also "The Iron Age," December 19, 1946).

All too often in the finishing operation a great deal of care is taken to obtain a clean sheet of aluminum from the cleaner bath, but only a small fraction of this care is used to properly



Typical setup for removing drawing compounds and grease from the inside and outside of extruded aluminum tubing after being bent to shape for use in the fabrication of metal furniture
(Photo courtesy Reynolds Metals Co., Louisville, Ky.)

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rinse the cleaned sheet. It should be remembered that rinsing is just as important as cleaning, and the rinse tank, whether hot or cold, should be kept clean and free of carry-over solution. A steady stream of water should flow into and out of the tank to accomplish this objective. A flow equal to 5 to 10 per cent per minute of the total volume is not excessive. Frequent testing of the rinse water with phenolphthalein will indicate if too much carry-over is being permitted. A clean rinse tank ensures complete film removal and eliminates all traces of cleaning solution which would otherwise cause trouble in further processing on the finishing line.

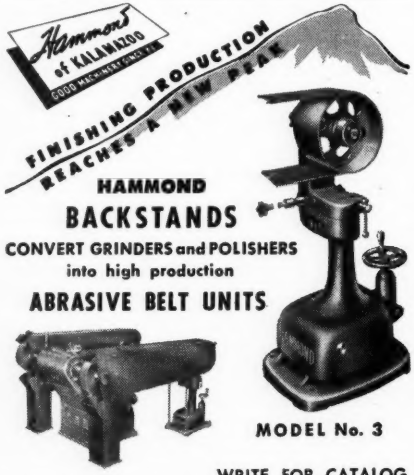
Acid treatments are sometimes desirable for certain cleaning operations (see also "Products Engineering," November 1946). This is particularly true when removing heat treatment oxide and welding or brazing fluxes. A nitric acid solution or a nitric acid-hydrofluoric acid solution is frequently used to remove welding flux, to clean parts after brazing, and to strip phenolic and black japan coatings.

One of the commonly used acid cleaning agents for aluminum consists of a mixture of chromic acid and sulfuric acid. This mixture removes heat-treatment film and serves as an acid pickle prior to electroplating by the "zinc immersion" process. It can also be used prior to anodic oxidation treatments and is helpful in preventing surface irregularities caused by oxide inclusions or imbedded buffing particles. For certain operations, acid cleaning of this type may possess definite advantages in that it removes a minimum of metal and leaves the surface with a relatively clean, attractive appearance of semi-brightness.

* * *

Clear Metal Lacquers Require Consideration in Selection and Application

CLEAR lacquers are applied to many types of metal products as protective or ornamental finishes. Many products of the builder's hardware, lighting fixture, and metal novelty industries, as well as many other miscellaneous metal articles, leave the manufacturers' assembly line with a final coat of clear lacquer. In selecting a lacquer which is best suited for finishing work, the lacquer consumer should make a careful analysis of the conditions to which the lacquered metal articles will be subjected and then select the tests which will determine if the lacquer will withstand those conditions. It is obvious that a general purpose metal lacquer must rate high in all tests such as those for adhesion, minimum stain and crystal spotting, hardness with flexibility, aging without discoloration of film, maximum tarnish and perspiration resistance. Sometimes metal lacquers



Above: "VRO" Polishing Lathe with two No. 3 Backstands.

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Unretouched photo showing how Penchlor Acid-Proof Cement joints have stood up after 14 years' exposure to sulfuric acid spillage and fumes. Compare with badly corroded concrete sill which has been replaced many times.

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Result: For 14 years, the first installation with Penchlor Acid-Proof Cement in this country has resisted *chemical* attack by H_2SO_4 in all strengths . . . 14 years of *mechanical* punishment from daily use, other abrasion . . . this floor has *never* failed, *never* needed repair!

There's a performance tale that took some "doing". . . yet that's the kind of service you can expect from Penchlor Acid-Proof Cement. Penchlor is a superior sodium silicate cement, chemical-setting, quick-hardening, thorough-curing. Its resistance to a wide variety of acids has been attested by outstanding service in chemical plants, steel mills, pulp and paper mills, oil refineries and smelting plants.

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will be required to meet certain unusual conditions. In such cases, special lacquers are designed.

The selection and use of a high grade lacquer alone will not always ensure a successful finish, since the cleaning of the metal is one of the most important, though often neglected, phases in the lacquering operation. Thus, the successful use of a high grade metal lacquer may depend directly upon the kind of cleaning the metal receives prior to the lacquering operation. Proper cleaning means the complete removal of all foreign matter from the surface as well as pores of the metal.

Although improper cleaning of metal prior to lacquering has a deleterious effect on all properties of a metal lacquer, the properties of resistance to stain spotting, adhesion, and hardness are most noticeably affected. Oftentimes, a very small amount of grease left on the surface of an article which has been buffed is sufficient to destroy the adhesion of the lacquer to the metal and may even soften or imbrittle the lacquer film.

In the application of clear lacquers during hot, humid weather, occasionally a phenomenon known as "blushing" or "blooming" of nitrocellulose lacquers is noted. This behavior is caused primarily by the cooling effect engendered by the evaporation of the solvents used, resulting in the surface film temperature dropping below the dew-point of the surrounding atmosphere. The chilling, therefore, results in a precipitation of moisture on the surface of the work and this moisture finally precipitates either nitrocellulose or resin from the film. Films that have "blushed" during drying generally are found to possess very good mechanical properties.

One method of overcoming "blushing" troubles is by air conditioning of the lacquer room. Other means for

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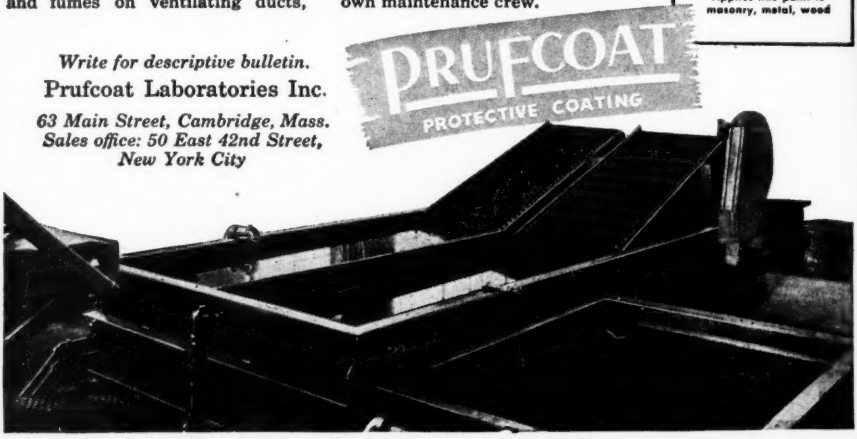
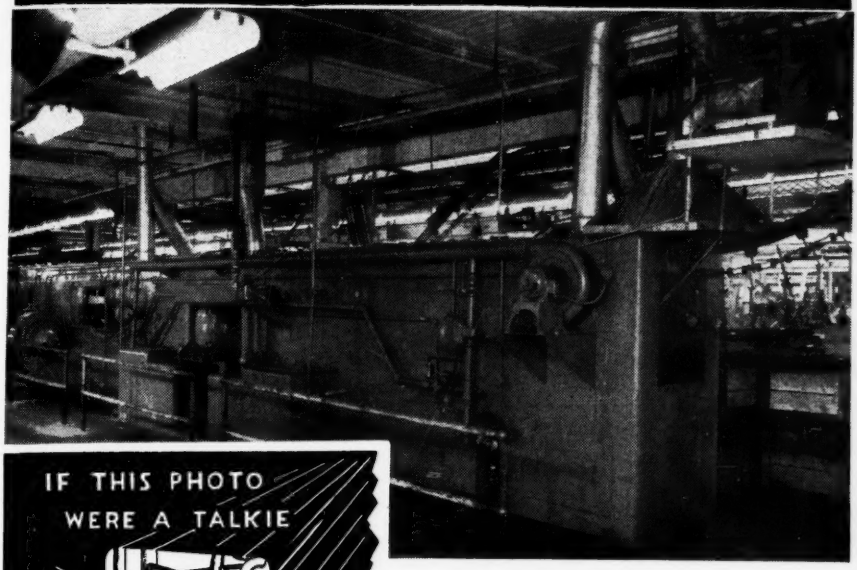


Ransohoff EQUIPMENT

for the surface treatment of metals



. . . it would tell you how it SAVES MONEY for the Houde Engineering Division in their Buffalo plant.

*** RANSOHOFF MACHINE TO WASH . . . RINSE . . . DRY . . . SHOCK ABSORBER PARTS**
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This is a monorail type machine which is designed to fit into Houde's production line and is built around their own monorail system.

It saves time, labor, costs.

It is gas fired; equipped with the patented RANSOHOFF *PACKLESS* PUMP; UNI-DRAIN . . . and the new exclusive RANSOHOFF chip baskets which are made of tubular wire mesh sections so that each section can be removed for cleaning and dumping accumulated refuse.

Let our RANSOHOFF ENGINEERS tell you —right in your plant—how we can design cleaning equipment for your special needs.

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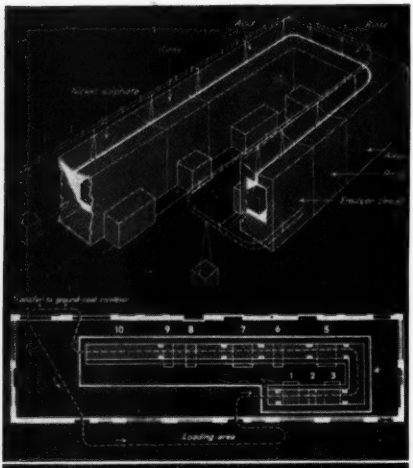
overcoming "blushing" are warming the work before finishing, letting the work dry in its own atmosphere, or warming the work after lacquering. Still other means of preventing "blushing" involve the use of retarders which are solvents for nitrocellulose and resins that have sufficient evaporating rates so as to remain in the film



STATION	SPRAY SOLUTION	STRENGTH	TEMP.	TIME, MIN.
1	Emulsion cleaner		160F	1½
2	Cold water			½
3	Alkali cleaner	1½ to 1¾ oz. /g.	160F	1½
4	Cold water			1
5	Sulphuric acid	7-12%	150F	2½
6	Cold water			1
7	Nickel (Single salts)	1½ to 3 oz. /g.	170F	2½
8	Cold water			1
9	Neutralizer (Soda ash and borax)	0.45 to 0.55% Na_2O	155F	½
10	Air Blast		220F	3

Representative operating cycle of automatic machine for pickling metal prior to porcelain enameling
(Illustration courtesy "American Machinist")

after the temperature has risen above the dew-point and the moisture has left the surface, which may bring about a resolution of the nitrocellulose film. In some cases, such compounds may be used to retard the rate of evaporation so that cooling below the dew-point does not occur. The use of retarders with clear lacquers for coating brass or oxidized finishes may be objectionable due to staining of the work.

The appearance of better solvents and new resin materials is aiding in overcoming "blushing" difficulties.

* * *

Continuous Spray Cleaning and Pickling Useful for Porcelain Enameling

ACCORDING to William W. Clarke, in discussing advances in surface treatment in the 1947 issue of STEEL's "Yearbook of Industry," one of the outstanding recent developments in the finishing industry is a machine for the continuous spray cleaning and pickling of metal parts prior to porcelain enameling. The machine comprises a completely closed unit which can be placed anywhere in the plant without danger to adjacent equipment, even the pickling fumes having been eliminated in the exhaust air from the spray compartments. Thus, according to Clarke, the quality of work is not left to the discretion of an operator. For any given setting of the machine, each piece of work is cleaned, etched, nickeled, and dried with exact uniformity, and rejects from cleaning failures are virtually eliminated. Due to the improved method of cleaning there has also been an improvement in the quality of bond or adherence between the enamel and steel. Test panels have shown an unusual uniformity in adherence over the entire piece.

One installation of this type is being used for processing porcelain enamel parts in the plant of Landers, Frary and Clark. According to L. A. Brown, vice president in charge of manufacturing, a 50 per cent increase in production has been realized as a result of the completely automatic cleaning and pickling setup (see also "American Machinist," January 30, 1947). With the equipment, complete removal of all soil, soap, drawing compounds, rust and scale, is effected on

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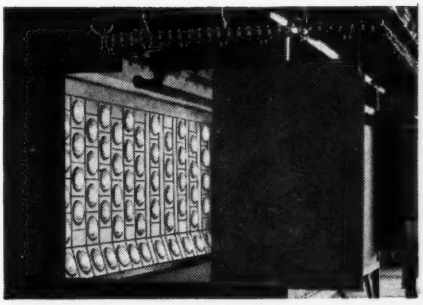

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At last! You can bring heat up to desired temperatures *immediately* and "hold" temperatures *without wasting power!* Jensen "flexible spacing" . . . with unlimited heat variance combinations . . . makes this possible. Lamps can be concentrated on close centers at the beginning of the oven and spread farther apart in rest of oven. You cut power costs. You use fewer lamps.

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washing machine tubs, range bodies, and other sheet metal items. In addition, it has been found that the etching action is so thorough and uniform that less expensive grades of steel can be used for porcelain enameling purposes. The uniformity of results produced is attributed to the use of sprays impinging on the work from all angles. No in-process rusting or oxidation can occur, since the work is kept wet until it reaches the drying oven from which it emerges properly dried and neutralized. Conveyor racks are designed for good drainage of parts.

Another advantage of the continuous automatic operation which contributes to the quality of porcelain enameled products is that the metal is given a uniform coating in the nickeling procedure, using nickel sulfate according to recommended practice. Iron contamination is avoided by the use of continuous filtration to remove iron hydroxide sludge.

Fume laden vapors from the automatic setup are not permitted to escape into the shop or atmosphere. Ventilating air, sucked into the acid or caustic stations of the machine, is passed onto two water-spray air scrubbers, which discharge only moist air to the atmosphere.

* * *

Advantages of Infra-Red Baking

THE production man in the finishing department considering the use of radiant heat baking should remember that the outstanding feature of this type of baking is that a great amount of energy may be directed upon a body, causing a quick response and producing a rapid rise in temperature. Thus, the types of products and materials baked by radiant heat lamps should be chosen for their adaptability to this baking operation.

To use radiant heat to best advantage, it is obvious that consideration must be given to the thermal laws governing its behavior. The absorptivity of the receiving surface is an important factor, since the reflection of energy becomes the major loss in heating objects having low absorptivities. The air temperature of the infrared oven should be as high as possible, since decreased convection losses enable the object being baked to reach higher temperatures. However, since the energy received from the source is entirely lost by reflection, convection, and radiation when the maximum temperature is reached, prolonged baking periods could become economically unprofitable.

The materials to be baked by infrared should be chosen for their adaptability to the advantages offered by it. One of these factors is the effect of polymerizing materials on the rate of film hardening at high temperatures. The fact should be recognized that economy and increased production will result from the judicious formulation of protective coatings for the high-

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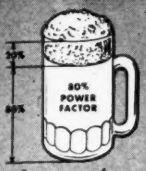
ELECTROPLATING FUNDAMENTALS— how power factor affects plating cost

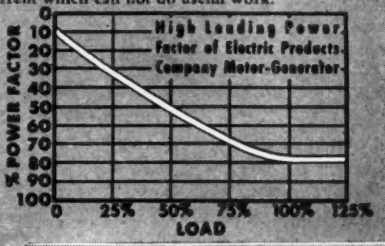


Study the mug of beer. It's a picture of Power Factor.

The foam is magnetizing current. *The beer* is alternating current which can do useful work. Most plating shops are forced to use *both* kinds of current. You have to buy the *foam* to get the *beer*. Power factor is the ratio of the beer to the total; high Power Factor means less expenditure for current which can not do useful work.

In many shops, the high leading power factor of the E.P. synchronous motor has vastly improved overall shop power factor. The result is lower power bills, plus improvement in overall shop equipment efficiency . . . all at no extra cost.

Consider Power Factor when you select your generating equipment. You'll find the motor-generator does the job better.



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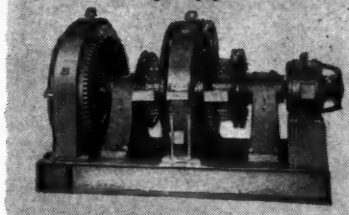
- *More amperes per dollar*—because of their reserve capacity, E.P. motor-generators safely handle heavy overloads.
- *Minimum plating cost*—inherent constant-voltage output assures the same rate of deposit at all times.
- *No special protective equipment*—expensive forced-draft ventilating is not required with E.P. motor-generators.

When selecting generating equipment for any electrolytic job, specify E.P. motor-generators. They give economies of operation unmatched by any other source of direct current.



Every part of an E.P. Motor-Generator is readily reached for inspection and maintenance particularly important with relation to the bottom brushes. E.P. equipment requires no special protective equipment. Thirty-four years of operating experience prove that these Motor-Generators function safely under the extreme conditions common to most electrolytic operations.

WRITE FOR BULLETIN 202. It describes the entire line of E. P. Motor-Generators for the Electrolytic Processes.

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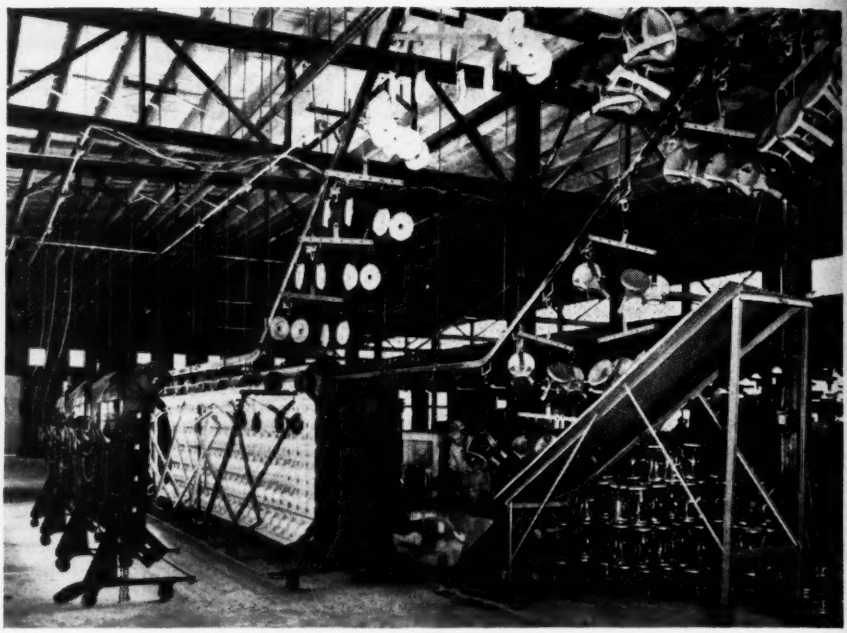


Properly designed and engineered infra-red installations have flexibility and good control, as indicated by the variety of parts being baked in this installation at the Girton Manufacturing Co., Millville, Pennsylvania.
(Photo courtesy Fostoria Service, Buffalo, N. Y.)

temperature, short-schedule baking conditions made possible by radiant heat baking.

The use of infra-red is advantageous on parts with thin webs to avoid curling of the webs. Radiant heat also eliminates to a large degree the so-called "case hardening" of finishes (see also "Materials and Methods," October 1946).

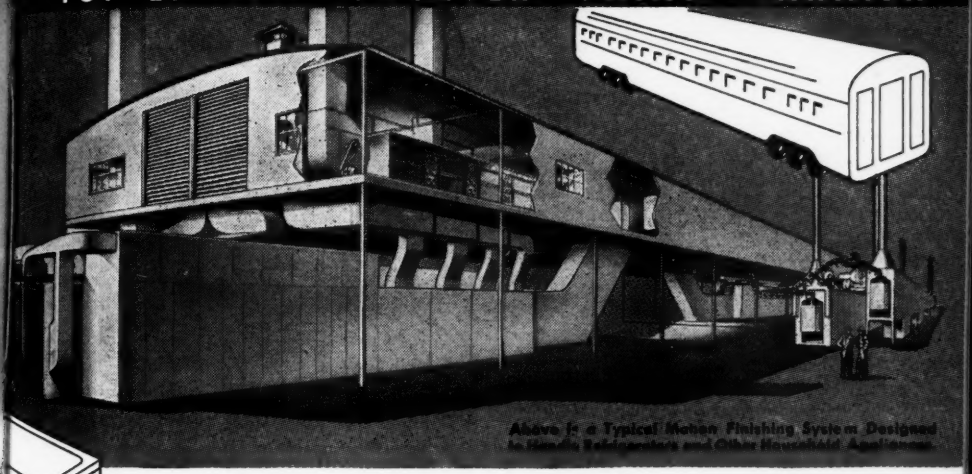
The type of finish is an important factor in the consideration of infra-red radiant heating. In general, the curing of finishes that utilize an oxidation reaction cannot be accelerated sufficiently to warrant the adoption of infra-red. Those finishes that cure primarily by polymerization or by evaporation are generally suitable to the infra-red process, the polymerization type finishes, as pointed out above, being particularly suited to short-cycle curing. Multicolored finishes on the same part may offer some difficulty in baking. For example, the dark finish on a part will heat faster and reach a higher end temperature than a lighter portion. Thus, under such conditions there is danger of not obtaining the proper range of curing or baking temperatures for the different colored finishes. Special formulations of varied-color paints will sometimes equalize curing temperatures.

Infra-red radiant heating is also well suited for curing finishes on parts whose shape and mass are such that all surfaces receive approximately the same intensity of radiation. Assuming a properly designed and engineered installation, the radiant heating method has flexibility and good control.

E

SYSTEMS

for ENAMEL • LACQUER • PAINT • VARNISH



Above is a Typical Mahon Finishing System Designed for Handling Refrigerators and Other Household Appliances

. . . Experience Gained In Many Industries Assures Better Planning, Better Engineering

In the planning and engineering of modern Finishing Systems to meet the requirements of present-day production methods, there is no substitute for experience. That is why so many manufacturers in every industry all over the world turn to Mahon for the ultimate in modern finishing equipment . . . they know that for over twenty-five years the Mahon organization has pioneered this highly specialized field. Constant research, development, and close contact with production experts in every industry where finishing constitutes a major production operation, have endowed Mahon engineers with a wealth of technical knowledge and practical know-how not available to you elsewhere. See Mahon Insert in Sweet's Mechanical Industries File, or if you are contemplating new equipment in the near future, a Mahon engineer will gladly consult with you on your requirements.

THE R. C. MAHON COMPANY

HOME OFFICE and PLANT, Detroit 11, Michigan • WESTERN SALES DIVISION, Chicago 4, Illinois

Engineers and Manufacturers of Complete Finishing Systems including: Metal Cleaning Machines, Rust Proofing Machines, Dry-Off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply Units, and Drying and Baking Ovens. Also Paint Reclaiming Units, Hydro-Foam Dust Collecting Systems, and many other Units of Special Production Equipment.

AHON

After due consideration of the many factors that are involved in any finishing problem in the light of the capabilities and limitations of infra-red radiant heating, if the finish curing work favors this method of heating, it will usually result in short curing cycles that can readily be conveyorized, thus generally resulting in space savings and low unit costs.

* * *

Some Possibilities of Latex-Dip Coatings

THE industrial designer and finishing engineer looking for a different or unusual coating for certain types of new metal products should not overlook the recent possibilities opening up in latex-dip coatings. The purposes of these latex-deposited coatings may be as varied as the products of one industry vary from another. The next few years should see many new ideas in the mechanical application of latex-dip coatings to many different types of metal products. The properties of deposited coatings may vary from soft resilient rubber to hard rubber or vulcanite, depending on the type of latex used and the compounding employed (see also "Mechanical Engineering," December 1946). The coatings may be oil-resistant, weather-resistant, light-resistant, and unaffected by medium concentrations of acids or alkalis. The film thickness applied may be as little as a few thousandths of an inch or can be as much as $\frac{3}{16}$ inch. The coatings can be colored, thereby adding to the sales appeal of many types of metal articles.

Get.. FLAWLESS FINISHING RESULTS
PREPARE THE SURFACE
with
Crystal
TACK RAG
TACK OFF THOSE SPECKS
Speed Up Your FINISHING PRODUCTION LINE with this Soft Tacky Cloth
BCP
TACKY WIPERS
Available in GROSS LOTS thru PAINT DEALERS or from the Processor
Industrial Size 18 x 36
Spontaneous Combustion Proof
Exclusively Processed by
BAUGHN CHEMICAL PRODUCTS CO.
7027 North Ravenswood Ave., Chicago 26, U. S. A.

Screens, racks, trays, and a variety of metal products can be coated with a rubber film deposited from latex. The coating of live resilient rubber in a wide variety of colors on trays and dish racks reduces noise and breakage and adds greatly to sales appeal. For instance, the ordinary milkman's tray for handling milk bottles becomes practically noiseless and soon pays for itself in reduced breakage. Bottle and beaker racks and sterilizing trays, for use in hospitals and laboratories, might profitably be latex-coated. As mentioned before, an extremely thin film only a few thousandths of an inch thick may be deposited, or a sufficiently heavy coat to fill in all the holes or openings in a screen may be used.

However, in the manufacture of metal articles to be latex-dip coated, a few precautions should be observed. In general, sharp edges are best avoided because the latex coagulum, as it dries, shrinks and the film over the sharp edges is thinner than elsewhere. Also, sharp angles are cause for bridging, therefore, wherever possible, all sharp edges or angles should be avoided by using a substantial radius.

In addition to the fact that the appearance of many types of metal articles may be improved by latex-dip coatings, as well as taking advantage

SPEED-WET* Belts & Discs for "RESIN BOND"

speed · cut · stamina

IMPROVED SPEED — dry-grinding with Speed-wet Resin-Bond Backstand Belts.

IMPROVED CUT — weld-grinding with Speed-wet Resin-Bond Fibre Discs.

IMPROVED STAMINA — wet-grinding with Speed-wet Resin-Bond Belts.

Resin-bonding increases the production rate, quality and total output of abrasive belts and discs by retarding loading-action and grain-shedding due to adhesive breakdown under the severe heat of cut.

Each individual abrasive grain in a Speed-wet Belt or Disc is twice anchored in a heat-set resin adhesive, which once cured and hardened cannot remelt or flow again under further exposure to heat or moisture.

Thus for dry or coolant grinding or for polishing and finishing of metals or glass or plastics, Speed-wet resin-bond abrasives deliver premium performance by any standard—production-speed, finish-quality or cost per unit.

Specify Speed-wet Metalite for aluminum oxide grit or Speed-wet Durite for silicon carbide. Metalite or Durite—they are both resin-bonded if they are marked "Speed-wet."

* *Reg. U. S. Pat. Off.*

BEHR-MANNING

(Division of Norton Company)

TROY, N. Y.

of the "sound deadening" properties, one other important advantage is that metal parts subject to abrasion by particles impinging on the metal surface can be protected effectively by latex coatings. There are also a number of so-called engineering applications of latex coatings that might, in many instances, contribute to the manufacture of a better overall product. In some cases, it may be necessary to protect metal parts against moisture, salt spray, acids or alkalis, corrosive fumes or contamination of the materials being processed. The latex coating may be used for electrical insulation or as a separator for two dissimilar metals to prevent galvanic corrosion. Also, a latex film may serve as the sealing face against gases and liquids in valves and diaphragms. The coating technician will do well to keep in mind some of the unusual applications which are rapidly developing from this coating material.

Determination of Thickness of Tin Coatings on Copper and Brass

IN the control of finishing processes involving tin coatings on copper and brass, the need may arise for a satisfactory test procedure for determining the weight or average thickness of tin that is being applied. Tin is often applied in such cases to utensils and fittings subsequently to be used in contact with food, milk, and so on, therefore, a dependable method for determining coating thickness is important.

A rapid, economical method for such determinations recently described by K. R. Hanna under the auspices of the Standards Association of Australia involves the selective stripping of tin in a boiling solution of sodium hydroxide containing suspended bismuth hydroxide (see also A.S.T.M., December

Grainlock
Polishing Wheel Cement

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Better Still, We Bring Them To You
Your Job Is Set Up To Your Entire Satisfaction
You Cannot Beat This Offer or The Results Obtained

Write Us Today

INDUSTRIAL LUBRICANTS COMPANY
5736 TWELFTH STREET **DETROIT 8, MICHIGAN**

JETAL BLACK

has 9 lives...

AS A FINISH ON IRONS AND STEELS!

JETAL is a BLACK oxide coating that is tough, long lasting and adaptable. **JETAL** may be resistance or spot welded and soldered. It will not chip, peel, crack, crumble or dust off, even on bending or cutting. There is no dimensional change after treatment. The smooth, dense coating forms a fine base for lacquer, enamel or japan.

JETAL is long lasting. It can be applied in 5 minutes! Wear resistance and penetration are better than any black on the market. **JETAL** is black BLACK, deep and solid. It costs less and is easily applied by immersion or chemical oxidation, in bulk, baskets or barrels.

JETOIL 1A

Rust is the common enemy of all metals, and JETOIL 1A effectively combats it. JETAL coatings, with JETOIL 1A added as a supplemental oil film for protection during assembly, inspection, storage or in service, do not show first appearance of rust until after more than 50 hours salt spray testing.

OTHER **ALROSE** FINISHES

WHITE

ALROSE CHEMICAL COMPANY

Manufacturing and Research Chemists

PROVIDENCE, RHODE ISLAND • WILLIAMS 3000

1946). It is reported that this solution will thoroughly and rapidly remove all the unalloyed tin without corroding the base metal. The stripping solution is prepared by adding 40 grams of bismuth nitrate to a solution consisting of 100 grams of sodium hydroxide dissolved in one liter of water.

Specimens selected for test are first cleaned of all grease with solvents, dried, and weighed. After weighing, it was recommended that each specimen be placed in a sling of nichrome wire and immersed in the boiling sodium hydroxide-bismuth hydroxide stripping solution. After immersion for one minute, the specimen is removed, washed, and inspected. The process of dipping, washing, and inspecting is repeated with each specimen until it appears that the coating has been completely removed. The specimen is then dried and weighed. For highly accurate determinations, it may be desirable to repeat the sequence of immersion, rubbing, washing, drying, and weighing until the weight of the specimen remains unchanged.

From the total loss in weight, the average thickness of the coating can be found by applying the following formula:

$$T = \frac{W}{A \times 118}$$

Where

T = average thickness of tin coating, in inches

W = total loss in weight of specimen, in grams

A = total area of tin coated surface, in square inches, and

118 = weight in grams of 1 cubic inch of tin.

Results may be reliably reported to the nearest 0.0001 inch. The bismuth in the de-tinning mixture may be recovered for re-use by precipitation with metallic tin.

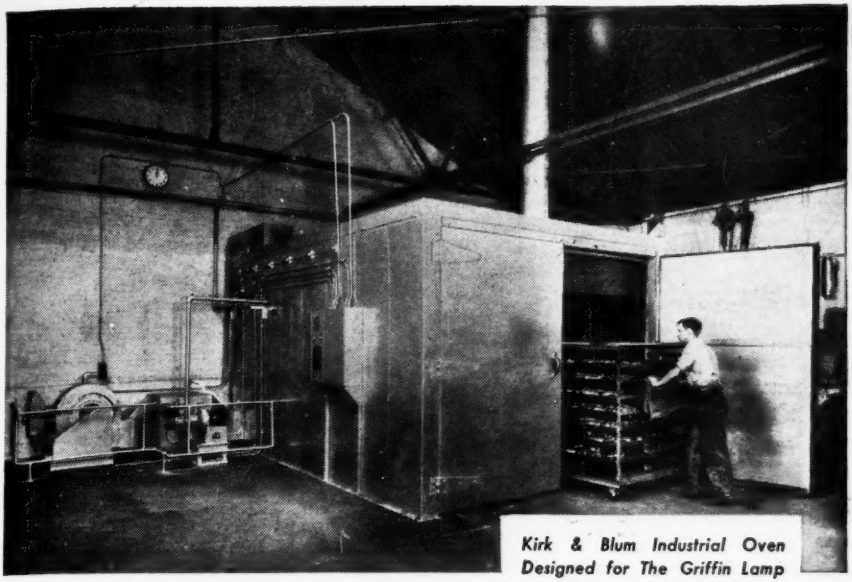
Paint Overspray
We will purchase and/or have reclaimed paint overspray from water curtained spray booths. Any type paint, enamel or lacquer is acceptable.
MECKLER
Chemical Corp.
3748 E. 91st St., Cleveland 5, Ohio
251 W. 42nd St., New York 18, N. Y.

Clizbe Electric and Belt-Driven Grinders, Polishing Machines, and Countershafts are featured in a catalog now being distributed by the Clizbe Bros. Mfg. Co., 1934 Harrison St., Plymouth, Ind. Copy of Catalog No. 7-A free.

33rd Annual Proceedings of the American Electroplaters' Society. Published by American Electroplaters' Society, Box 168, Jenkintown, Pa. 304 pages. Illustrated. Cloth binding, board covers. Price, $6.50.

This volume presents the technical sessions of the 33rd Annual Meeting of the American Electroplaters' Society held in Pittsburgh from June 17 through June 20, 1946. It provides a complete outline of each of the five educational sessions held, including the name of the presiding chairman at each session and the names of individuals presenting papers as well as a complete presentation of their particular papers.

A handy table of contents is conveniently provided at the front of the book, while the rear of the book contains an index listing papers as to subjects, as well as the names of the various authors.



Kirk & Blum Industrial Oven Designed for The Griffin Lamp Company, Hamilton, Ohio

speeding finishing operations...

To meet the special requirements of The Griffin Lamp Company, Kirk & Blum Engineers designed and built this direct gas-fired automatically controlled oven unit with a maximum operating temperature of 450°F to bake the paint finish on auto lamps.

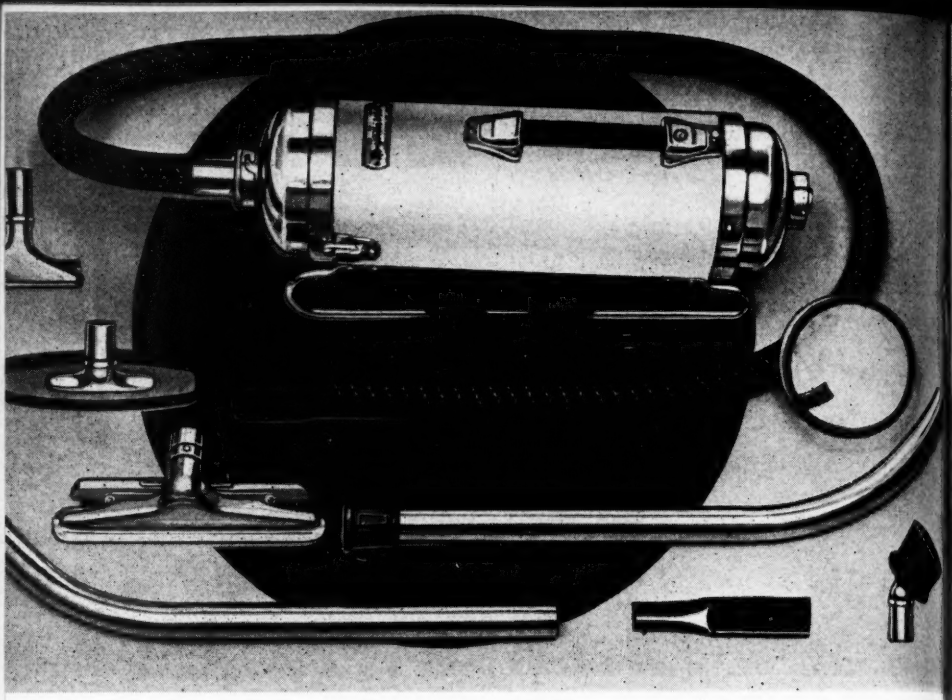
The lamps are dipped, sprayed, placed in wire mesh trays and stacked in the oven trucks. Each truck holds 32 trays and the capacity of the oven is four trucks per charge providing a production rate of 8 trucks per hour based on a 30-minute bake.

Manufacturers—large and small—have proved beyond a doubt that Kirk & Blum engineered baking and drying systems will produce better finished products at lower cost.

Put your finishing problems up to Kirk & Blum—they have the engineering knowledge and experience to design and build systems that are guaranteed to meet the most exacting finishing requirements. Write The Kirk & Blum Mfg. Co., 2816 Spring Grove Ave., Cincinnati 25, Ohio.

KIRK AND BLUM

INDUSTRIAL OVENS



Cleaning and Finishing Vacuum Cleaner Parts

By SANFORD MARKEY
UTPS Correspondent

INDUSTRY'S continuous fight for greater production speed is reflected in an achievement reported by the P. A. Geier Company of Cleveland, which, by employing a unique washing technique plus infra-red drying, today does in less than five minutes a job that formerly required an hour and 45 minutes. The P. A. Geier Company manufactures Royal vacuum cleaners, each of which includes at least 412 component parts. Practically all of the parts are made of metal and are washed and either japanned or varnished.

During prewar days, the company washed, dipped or sprayed, and enameled the metal parts by what seemed an endless time-consuming process. As a result of the utilization of a new seven-step washing procedure and the installation of a conveyor line process

Shown above is a completed Royal vacuum cleaner, together with its various attachments. Many of the parts comprising the unit are made of metal, which is cleaned, painted, and dried at a high speed rate in the plant of the P. A. Geier Company.

Present-day Parkerizing* is the evolution of a product which for more than thirty years has been the standard method of finishing for rust control on iron and steel.

Improvements have shortened processing time, lowered operating temperatures, produced smoother coatings, lowered the cost of application.

Parkerizing is a conversion method which changes the surface of iron, steel, and zinc to a water insoluble crystalline coating. Variations from original dimensions are at a minimum, and Parkerizing can therefore be used on fine screws and other products with close tolerances. Larger products—forgings, stampings, castings—may be treated in any size which can be immersed in the Parkerizing solution.

Parkerized articles may be painted, if desired, or finished with stain, oil or wax.

Get full information on Parkerizing for rust control on your production. Write today!

PARKER RUST PROOF COMPANY
2172 E. Milwaukee Avenue, Detroit 11, Michigan

*Parco—Reg. U. S. Pat. Off.

BONDERIZING Holds Paint to Metal
PARKERIZING Inhibits Rust
PARCO LUBRIZING Retards Wear on Friction Surfaces

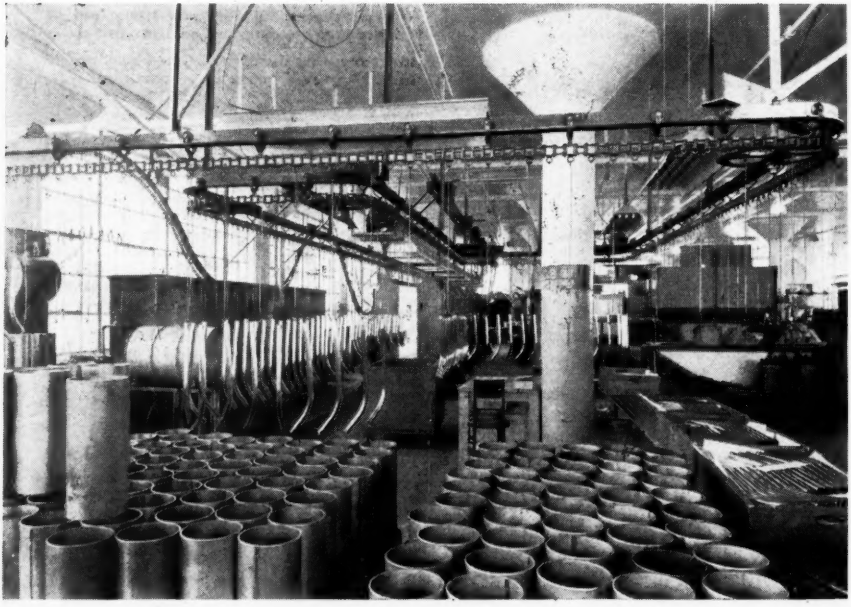
PARKER PRODUCTS CONQUER RUST

of painting, together with infra-red drying, the company is being greatly assisted in meeting today's increased cost of labor and materials.

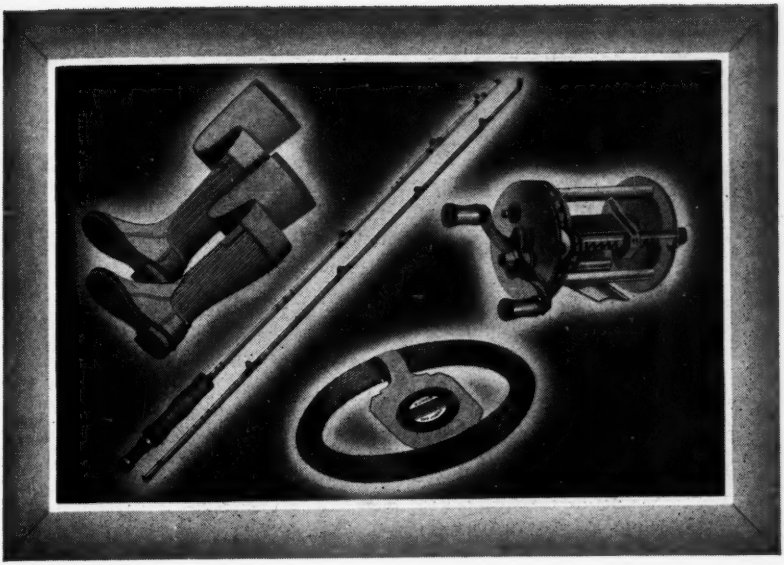
The Geier Company receives its metal parts from foundries. The parts are usually dirty and covered with grease. The problem of cleaning the metal before finishing thus becomes imperative. To meet with this problem in its expanding postwar program, the company installed a mechanical conveyor-line washing system whereby the metal is put through seven steps before it emerges from the conveyor line, clean and ready for subsequent processing.

In the first step the metallic part is conveyed into a chamber and sprayed with a mixture of oil and soap at a pressure of 12 pounds at 110 degrees. The part is then conveyed out of the chamber so as to permit draining to take place. In this operation, penetration of the mixture of oil and soap into the dirt occurs. In the third step, a cold water spray at 40 pounds pressure is directed against the metallic part, thereby loosening all surface dirt. In the fourth step, the part is subjected to a mild alkaline solution treatment employed at 40 pounds pressure at a temperature approximating 180 degrees. During this step, whatever dirt has remained on the outside of the part is removed.

In step five, the conveyor line moves the part through another chamber in which hot water, at 160 degrees and 40 pounds pressure, is liberally splashed over the part. Step six comprises a cold air blow which knocks off clinging water particles to eliminate spotting. In the seventh and final step, the part is hot air dried in a chamber heated to 200 degrees and then con-



Vacuum cleaner parts are shown being conveyed from a paint dipping tank into an infra-red tunnel for baking and drying.



"FINISHES"... *by Stanley*

Spring is here . . . which reminds us that even fishing equipment can be made more beautiful, more durable, more saleable by Stanley finishes.

Rubber waders are given a final glistening coat of a special lacquer developed by Stanley research for the rubber industry. Tough Stanley lacquers protect rods and reels. Many coats of other Stanley lacquers or synthetics go on high-grade lines.

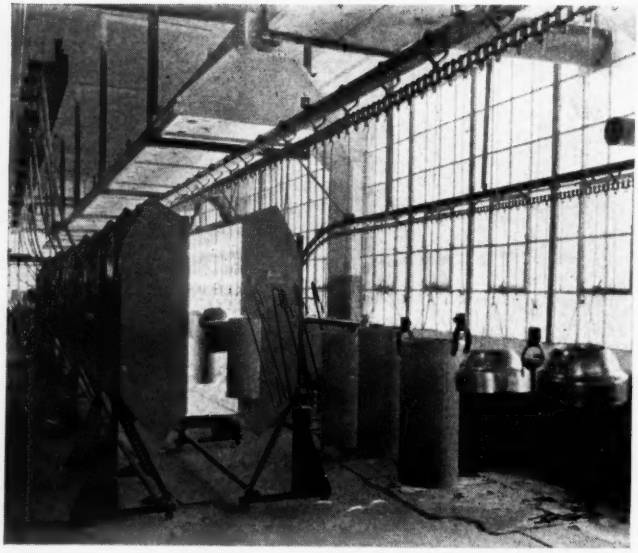
Each of these is a special finish. And special finishes for special jobs is Stanley's business. Our staff will welcome the chance to work on *your* finishing problems . . . wood, metal, rubber, textiles, or any other material. Write to Stanley Chemical Company, East Berlin, Connecticut.

STANLEY

STANLEY CHEMICAL

INDUSTRIAL COATINGS

LACQUERS SYNTHETICS JAPANS ENAMELS



This illustration shows a close-up view of the infra-red tunnel at the P. A. Geier Company into which the various metal vacuum cleaner parts are conveyed for baking and drying.

veyed out of the chamber several feet to permit complete and thorough drying of the external surface.

Before the system described above was utilized, washing was all done by hand. One worker was required to place the metal product on the conveyor hook, another to dip the part, and so on, so that nine men in all were needed for the washing process. Moreover, only 15 pieces were washed, dipped, and wiped per hour.

With the new washing system, a clean metal article comes off the conveyor line at the rate of one every 45 seconds. Furthermore, the entire process necessitates the services of only two men. The conveyor line can be operated at the rate of 4 feet a minute during normal washing, or at the rate of 3 to 9 feet a minute, depending on the metal item being washed.

After coming off the washing line, the metal unit is then transferred to a newly established plating department having plating tanks holding 14,000 gallons of solution and allowing for the treatment of 10 to 15 metal pieces at one time. Also, in an effort to speed production at a reduced cost, the company has installed a new system for painting and drying many of the 412 component parts that make up the Royal vacuum cleaner. As a result, drying time has been cut in half, and, where formerly five or six persons were employed, now only one or two are required in order to complete the same action.

With the system, the metallic product to be painted is placed on a hook and conveyed to a degreasing tank where it is given a bath by vapors produced by heating a chemical which moves upward until it strikes cold water pipes located around the tank. Vaporizing, the chemical clings to the metal item which is passing at cold pipe level through the tank. Grease and oil, formerly on the product, are thereby thoroughly removed.

Thus chemically cleaned, the part is conveyed to another tank where it is dipped and moved sufficiently slow as to eliminate tears. From this point, the conveyor moves the painted item into an infra-red heating tunnel, where it is dried in a comparatively short time as against the previous method

The Back-Stand Idler of MODERN DESIGN

Light weight aluminum pulley perfectly balanced.

Double-sealed precision-made ball bearings.

Easily changed from right to left by loosening two set screws and reversing shaft.

Rugged all steel construction for a lifetime of trouble free performance... weighs only 165 lbs.

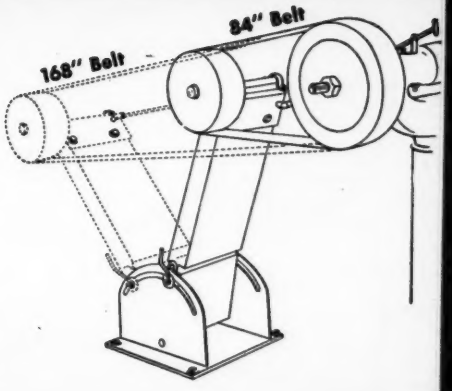
Snubber prevents vibration even with out-of-round contact wheel or irregular work application.

Adjustable Belt Tension maintained by four leaf-type springs.

Broad lateral adjustment for any belt length from 84" to 168" without moving base.

Use any length Belt

30 Second change to any belt length from 84" to 168"



"Has every feature we've ever wanted." That's what users say of the PRESTO Back-Stand Idler. Quickly adjustable for any length belt from 84" to 168". Adjustable spring tension with snubber action—no vibration even with out-of-round contact wheel or irregular work application. Handy angular alignment adjustment. Light weight aluminum pulley, perfectly balanced. Double-sealed precision-made ball bearings. Universal Mounting—works in any position. Easily changed from right to left. Rugged all steel construction. Carried in stock for immediate shipment. Order thru your Jobber or write us.

of baking through the use of gas.

The infra-red heating setup involves a battery of 440 lamps requiring 42 feet of floor space. This is less than half the space formerly required to dry a corresponding number of items, and the time involved is only 4½ to 9½ minutes as against 60 to 90 minutes formerly required. In the flat bank infra-red portable tunnel, bulbs of 250 watts are employed. Steel reflectors plated with gold assure maximum heat radiation and efficient utilization of energy.

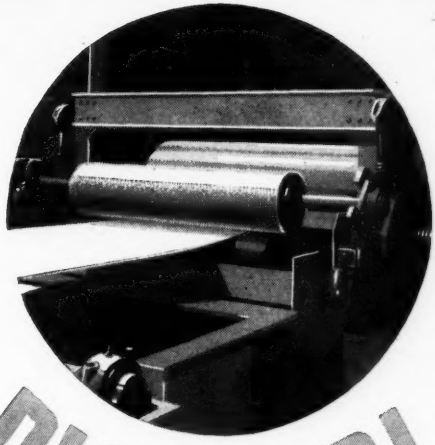
"What You Should Know About Modern Fire-Fighting Devices" is the title of a 24-page illustrated book published by the American-LaFrance-Foamite Corp., Elmira, N. Y. Of educational nature, the book not only describes but illustrates the proper use of the various types of fire-fighting devices for the class of fire for which each is intended. Copy free.

American Standard Z10.12. A new American Standard covering 163 letter symbols designed to afford chemists and chemical engineers with a uniform system of "shorthand" for use in their mathematical calculations is now being distributed by the American Standards Association, 70 E. 45th St., New York 17, N. Y. The new group of symbols is designed to provide the chemist and the chemical engineer with an agreed group of letter symbols which will permit a new degree of uniformity in the writing and discussion of chemical problems, particularly in textbooks, scientific papers, lectures, and the like.

In addition to a section covering 83 such general concepts as acceleration, diffusity, entropy, molecular weight, surface tension, thermal conductivity, and so on, the standard includes special sections dealing with terms relating to heat transmission, flow of liquids, evaporation, humidification, gas absorption and extraction, distillation, drying, sedimentation, filtration, screening and sampling, crystallization, centrifugation, and also various dimensionless numbers used by chemists. Copy of the American Standard Z10.12 is available at 50 cents.

CLINCO QUALITY FINISHES
CLINCO can supply you with quality finishing materials to finish any item.
Write Today for Complete Details
Let us help you solve any particular problems you may have where quality finishes will help.
COUNT ON CLINCO FOR
Improved Synthetic Enamels
For sure results use improved CLINCO Synthetic Enamels. One trial will testify to their superior quality.
THE CLINTON COMPANY
1210 ELSTON AVENUE
CHICAGO 22, ILLINOIS

Pickled steel gets a PICK-UP!



● Stainless steel sheets pickled in nitric and sulphuric acid baths must be finished off with a hot water scrubbing. That calls for a tough brush . . . and Pittsburgh Brushes get the call from all important strip steel producers. ● Many brushes wilt quickly when contact is made with hot water-sprayed steel sheets, but Pittsburgh's dense fill of white tampico and Bahia fibre mixture, spiral wound and evenly trimmed, stands up under the heaviest punishment. Fine, stainless steel wire wound mandrels also available.

Back the All-American "Scrub Team" of Pittsburgh Brushes

● A Pittsburgh Brush does the job fast and gives you a uniformly finished product. You can depend on Pittsburgh Brushes for better performance, enduring economy, and a minimum of lost time in change-overs. In the complete Pittsburgh line are brushes of all types, including "Perfect Balance" sections, wheels and section assemblies, Uni-Fill scratch brushes, as well as paint and other maintenance brushes. ● Consult the Pittsburgh engineering representative. He will gladly work with you in developing any type of power-driven brushes to meet your particular finishing requirements.

PITTSBURGH
PLATE GLASS COMPANY *Brush Division*
3221 FREDERICK AVENUE · BALTIMORE—29 · MARYLAND

Follow These Instructions in Making Reservations for A. E. S. Convention and Industrial Finishing Exposition, Detroit, June 23-27

DETROIT, like all large cities, is faced with an acute shortage of hotel facilities for convention purposes. To meet this situation to the satisfaction of all, the Housing Committee of the forthcoming A.E.S. Convention and Industrial Finishing Exposition has prepared a standard form which is to be utilized in requesting hotel space. These forms will be provided to all A.E.S. members from the National Headquarters. Exhibitors will receive the forms from the Committee.

All those desiring to attend the Convention and Exposition are requested to adhere to the instructions listed below:

(1) Request for assistance of the Housing Committee in obtaining hotel reservations must be received not later than June 1, 1947.

(2) Please use **only** the application forms provided and fill them out completely.

(3) Since only a very few single rooms are available, you are asked to cooperate in "doubling up" with some other delegate. In order to accommodate everyone, two persons will have to be assigned to a room in most cases.

(4) Please state your choice of hotels. The Committee will do its best to place you in the hotel of your choice, however, should that be filled, they will have to ask your cooperation in the assignment to some other good hotel.

(5) Please make your reservation application as early as possible. Assignment will be on the basis of first come, first served.

(6) The Housing Committee is limiting the reservations to the securing of sleeping rooms **only.** Any individual or firm desiring parlor suites or other space for entertainment purposes **must** make such request direct to the hotel.

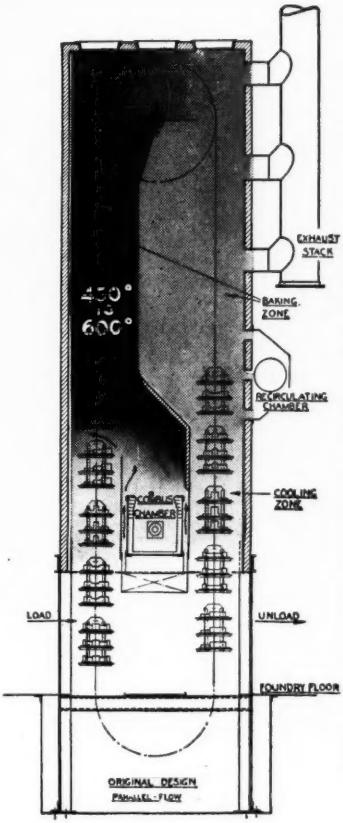
(7) The following hotels have accepted room assignments: Barlum, Detroit Leland, Fort Shelby, Fort Wayne, Imperial, Statler, Tuller, Wardell, Sheraton, and Wolverine.

(8) Room rates, due to present conditions, have not been firmly established as yet.

Federal Long-Life Selenium Rectifiers for d.c. plating power are the subject of a 24-page booklet published by the Federal Telephone and Radio Corp., 100 Kingsland Rd., Clifton, N. J. In addition to describing the economical and operational advantages of selenium rectifiers as plating power supplies, the booklet contains a representative series of recommended plating room layouts, complete with diagrams and tables of required power equipment. Copy free.

Beach Paint Spray Equipment is featured in an eight-page catalog published by the Beach Air Brush Co., 155 Warren St., Harrison, N. J. The catalog provides a complete description of the Beach Spray Gun, including its operation and specifications, and contains a list of gun parts. The use of the gun in connection with a pressure cup is also covered, as are tanks, heads, extension nozzles, compressors, and air conditioning parts. Copy free upon request.

BRING YOUR CORE-OVENS UP TO MODERN CROSS-FLOW EFFICIENCY

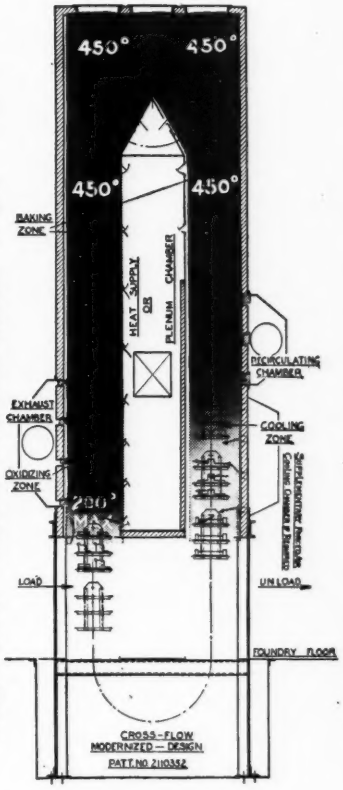


Cross-Flow Circulation and Recirculation for Batch or Continuous Ovens assures

Faster processing • More uniform baking • Better heat penetration • Less rejects • Closer temperature limits.

Oven ventilation is based on a parallel and cross-flow system. In the evaporating zone, care is exercised to keep the temperatures at a point that steam globules are not generated and retained within the body of sand after the surface is dried. In this zone, rapid circulation is provided at a soaking temperature, and directed so that the bases of the cores are dried at the same speed as the tops. Circulation is induced and controlled through fans and operating louvres.

After evaporation is completed the cores are subjected to a rapid heat, starting the oxidation of the oil binder. Oxidation is continued to the cooling zone. Through recirculation of heat, the fuel cost of operating the oven is at a minimum.



PLANT ENGINEERING: *Consulting assistance in plant layout to coordinate departmental operations, our experience dated from 1917 in this field.*

Such plant layout may be based on increasing production beyond present capacity, or it may be a rearrangement in this post-war period when operations are conducted under a new set of conditions.

MOTOR CLEANING EQUIPMENT: *Washing machines for cleaning tear-downs. Kerosene spray or similar solvent usually used as the cleaning medium.*

FORMED COWLINGS, PANELS, ETC.: *To your specifications, and of light metal alloys as required. Weldments and brazed assemblies may be under controlled atmosphere.*

PILOT EQUIPMENT: *Sample size equipment for development of heavy equipment.*

VERTICAL CORE BAKING OVENS • CONTINUOUS HORIZONTAL BAKING OVENS • BATCH TYPE CABINET OVENS • DRAWER OVENS

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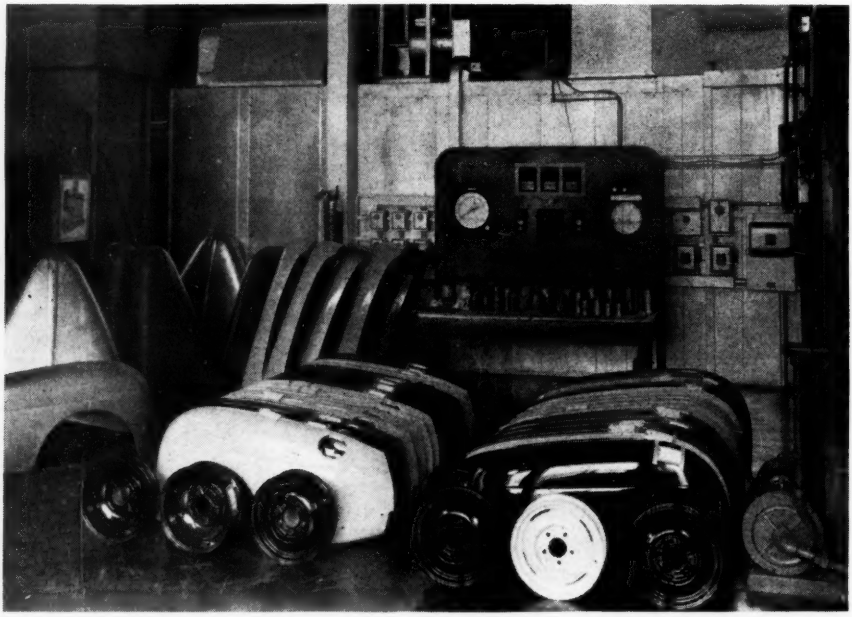
DETROIT SHEET METAL WORKS

DETROIT - 6 - MICHIGAN

PRACTICAL APPLICATIONS *of Modern Products*

Production Finishing Equipment Featured in Experimental Laboratory

AN experimental laboratory located in the Newcomb-Detroit plant at 5741 Russell Street, Detroit, is a production line installation, fully equipped with water type spray booths, water wash air supply equipment, and gas-fired ovens with various types of heating equipment. The laboratory was set up primarily to aid industry in developing new production processes involving finishing equipment of this type. The laboratory has been in operation for approximately one year and at the invitation of the Newcomb-Detroit Company, a number of manufacturers have found it helpful to bring their paint finishing, paint drying, heat processing, and material heating problems to this laboratory in order to



General view of Newcomb-Detroit experimental laboratory and display of various automobile body parts which have been finished under the supervision of the manufacturer.

A to Z KNOW-HOW for FINISHING ALUMINUM

Watson-Standard TECHNICAL COATING SYSTEM

The Watson-Standard system of technical coatings for finishing aluminum covers applications of all types from airplanes to zippers. The system has been formulated to answer all finishing problems arising with the greater demand for this versatile light metal.

Coating, decorating, and lithographing and all phases of production including preparation, treatment and finishing are discussed in the Watson-Standard treatise on "Organic Protective and Decorative Coatings for Aluminum Metal"

These coatings offer protection against weather, moisture, heat, abrasion, acids, alkalies and other corrosive materials. They add to the beauty by increasing the lustre of both metal and colors and are suited for use on castings, sheet or foil, extrusions and forgings. Since they are extremely durable they will withstand the severe fabrication necessary with many aluminum products.

Write for the Watson-Standard Treatise, "Organic Protective and Decorative Coatings for Aluminum Metal." No obligation.

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Manufacturers of
PAINTS • VARNISHES • INDUSTRIAL FINISHES AND LITHOGRAPH COATINGS

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Prescription Finishes
Give us your metal coating problem. We guarantee you an answer based on your conditions and not just a standardized formula.

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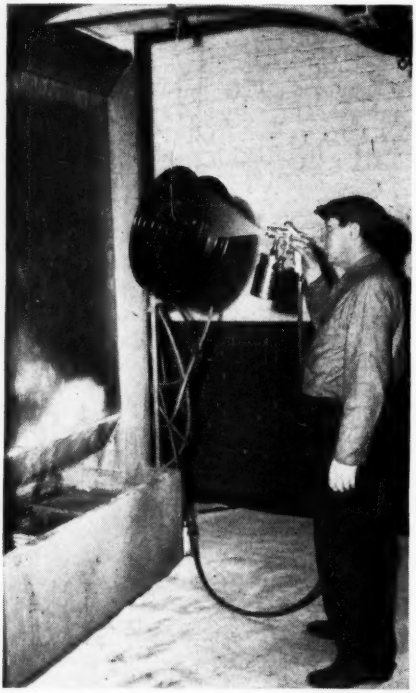
work out finishing problems before setting up production in their own plants.

Many small manufacturers do not have the facilities to run tests to predetermine temperatures, time cycles, and finishes to be used for particular jobs which they are contemplating. Many of the larger manufacturers



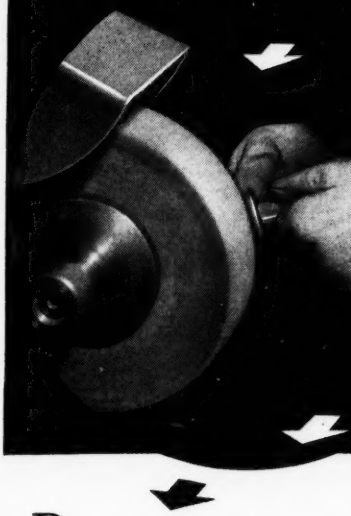
Operator applies finishing material to workpiece in Uni-Wash spray booth located in experimental laboratory. Note that this is full scale equipment as found in production-line installations.

have experimental departments of their own, but they are generally concerned with the development of the process itself rather than the investigation of the newest and most efficient types of equipment to be used in their painting and low temperature heating processes. It has proven beneficial, therefore, for a manufacturer of spray booths, oven and gas heating equipment to set up in a laboratory the very latest finishing and processing equipment and offer it to industry for tests and development purposes. Manufacturers of products which require paint finishes depend to a great extent on specialists in the spray booth, oven, and heating equipment field for the latest equipment most adaptable for their production lines. This experimental laboratory was established by finishing equipment specialists to permit manufacturers to run experiments and development tests using the newest types of equipment to solve their various problems more efficiently.

The company policy governing the use of the laboratory is simply to provide facilities for interested manufacturers to conduct their own tests. The Newcomb-Detroit Company provides the laboratory equipment and an operator to run it, and asks those using the equipment to furnish their own parts and materials as well as trained personnel from their own plants to actually conduct the tests.

The equipment installed in the Newcomb-Detroit testing laboratory includes a convection type drying oven with direct fired gas heater. This oven is 20 feet long x 6 feet wide x 9 feet high and is equipped with a direct fired gas heater and recirculating fan located on a platform on top of the oven. The heater capacity is 1,000,000 B.t.u. per hour and is capable of heating the oven from 100 to 500 deg. The controls are such that the oven may be held at any desired temperature between these points. The heater is a new type through which an extremely large volume of air is circulated. The gas burner is suitable for adaptation to any of the various types of gases used in industry. Heated air is supplied to the oven through high velocity nozzles positioned along the upper corners of

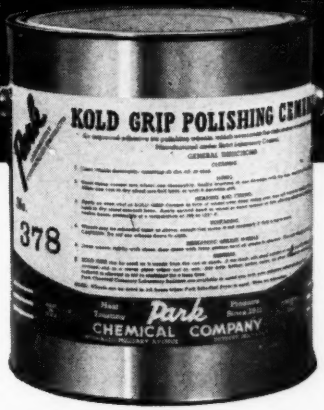
CUT FASTER, LAST LONGER



Park

KOLD-GRIP

POLISHING WHEEL CEMENT



PARK KOLD-GRIP POLISHING WHEEL CEMENT really "shines" on product finishing and polishing operations. A perfect binder for setting up any size wheel, it gives you faster cutting action, longer wheel life and greater all around economy than less effective glue. Ideal, too, for cementing wheel sections together and re-coating abrasive belts.

Manufactured under rigid laboratory control to assure uniformity of quality, PARK KOLD-GRIP POLISHING WHEEL CEMENT is available in 11 different grades . . . strong, hard cements for roughing to fine, flexible cements for finishing. Write today for complete details and prices.

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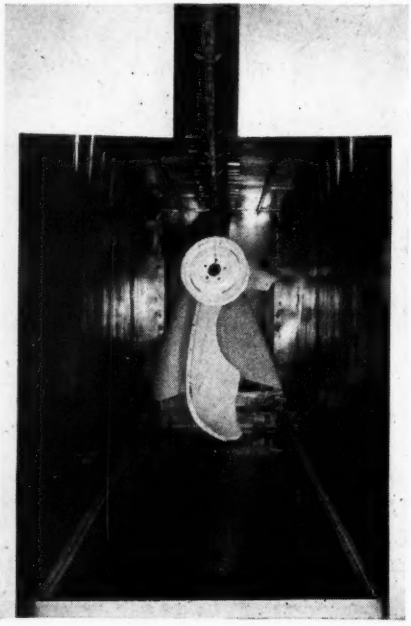
the oven. Air is directed downward along the inside walls to assure even temperature throughout the oven; and the air is recirculated back to the heater through a slotted duct at the roof of the oven on each side of an overhead conveyor. A "spill" fan is positioned at the top of the oven to exhaust the required portion of contaminated air, thus assuring the proper proportion of fresh and recirculated air. A line burner of the direct fired gas type is located along the floor of the oven for use in moisture drying and other experiments.

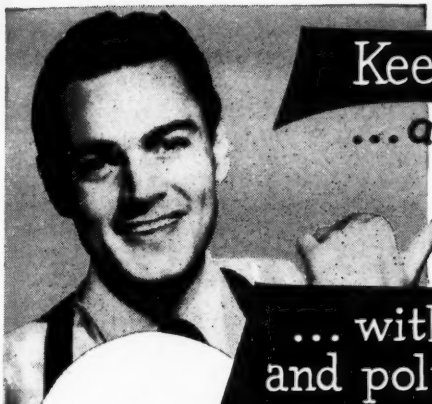


A view of gas-fired, convection type baking oven showing workpieces on overhead conveyor line. The oven is a production-line unit located in the Newcomb-Detroit experimental laboratory.

Engineers at the Newcomb-Detroit experimental laboratory state that prior to the war, the drying of synthetic enamel and other paints required approximately 45 to 60 minutes, depending on the paint and the process. Through the development of the new heater used in the laboratory, a much larger volume of air is circulated through the oven. A greater number of air changes per minute takes place in the oven, resulting in faster drying. A more equal distribution of heat from the floor line to the top of the oven is made possible through the use of an improved air distribution system. The drying time of finished coats now varies from 20 to 30 minutes.

Another unit in the experimental laboratory setup is a radiant type oven with direct fired gas burners. This oven is 20 feet long x 6 feet wide x 9 feet high. The refractory in the burners is heated to approximately 2,300 deg. and heat is radiated from the surface of the refractories into the oven. In addition to the radiant heat gained from the refractory burners, air is recirculated throughout the oven by means of a system of distributing ducts. A recirculating fan is located on top of the oven and distributes air into the oven through ducts located approximately 18 inches above the floor line along the inside of the oven. Air is circulated from the top of the oven back into the recirculating fan. A "spill" fan is provided on top of the oven to exhaust the proper amount of contaminated air to assure proper ventilation in the oven. "Air seals" are located at each end of the oven which recirculates a high volume of air in a vestibule 4 feet long. These "air seals" prevent cold air from entering the oven and prevent hot air from escaping from the oven entrance and exit during operation. A monorail conveyor is located on the ceiling of the oven.

When fast "bring-up time" is essential, and where the work to be heated is relatively thick and requires that the innermost parts of the work be brought up to heat rapidly, the rays from the radiant burners are very



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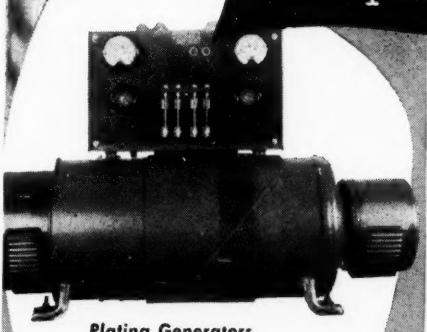

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If you have a plating job to do you can do no better than investigate M.G.C. equipment with years and years of electrical experience behind every unit.

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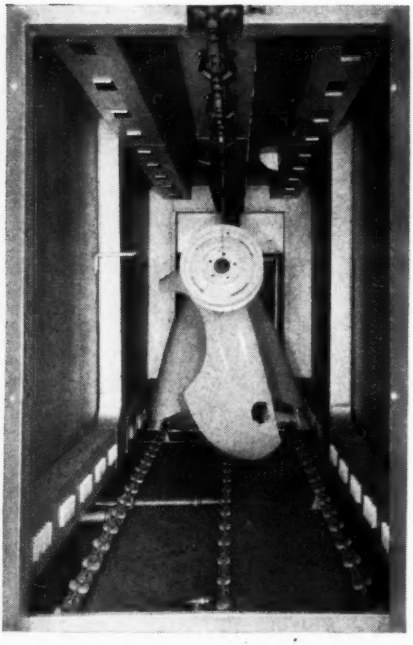
helpful in accomplishing the desired rapid heating. In processing workpieces, demonstrations reveal that the rays from the radiant burners will hold the work at approximately six to ten per cent higher temperatures than the actual temperature of the oven.

Demonstrations also reveal that the same paint dried at slightly different



Fast "bring-up time" is provided in this direct gas-fired, radiant type oven which is installed in the Newcomb-Detroit experimental laboratory.

temperatures or slightly different baking cycles will not match up on the finished product. Manufacturers producing a part of their product in one section of the country and another part in another section of the country must coordinate processes so that after assembling the product, an acceptable finish on all parts is assured. The Newcomb-Detroit laboratory is available for use by manufacturers to conduct unbiased tests on neutral grounds to predetermine many of these variable factors in setting up widespread manufacturing facilities.

Air Supply Units

In order to prevent dust laden air from being drawn into paint spray booth installations, manufacturers purchase equipment which will enable them to introduce clean conditioned outdoor air into the spray booth rooms. The introduction of clean air eliminates rejects and supplies sufficient air to the spray booths so that they will exhaust the volumes of air they are intended to exhaust. To meet the requirements of clean, conditioned air, Newcomb-Detroit has recently developed a packaged, preassembled air supply unit using the water wash principle as a means of cleaning outdoor air before introducing it to the spray booth. Either gas or steam heat may be used in cold weather for bringing the air to the desired temperature.

An efficient means of recirculating spray booth air back into the finishing room has always been a goal of plant engineers and equipment designers. Tremendous heat losses are brought about by spray booth exhaust when it is considered that all the B.t.u.'s exhausted through the spray both ventilating fans must be replaced in the finishing department if working areas are to be held at a suitable temperature for men to perform production operations. Newcomb-Detroit is at the present time installing several jobs in which one-half of the air exhausted from the spray booth fans is recirculated into the finishing department through Uni-Wash air supply units. This results in the introduction of only half the air used in the spray booth system from out of doors and likewise the exhaust of only one-half of the air exhausted through the spray booths. Substantial savings of heat are being experienced by users in the winter

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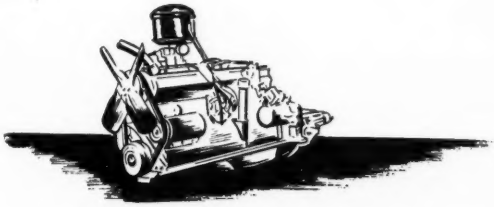

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Unichrome Coatings offer you the Right Combination of properties for your product... every time!

Do you finish machines or their accessories? Then you know the finish must be able to withstand both oil and heat—lots of it. The *right combination* in many cases may also require hardness, and resistance to water, alcohol and gasoline. Unichrome Coating B-124 is the finish that meets *all* those requirements — that's why machine builders specify it.

Whatever you finish, chances are there's a high quality Unichrome coating that's *exactly right* for your product. Why not find out about this one coating that will give your product longer surface life, and improve its "eye appeal" as well? Tell us the most important properties you require in a finish, and we'll send you full data on the Unichrome lacquer that fits. No obligation, of course.

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months. In the actual operation of this system, one-half of the spray booth exhaust air is rewashed in the air supply unit before being distributed into the spray booth.

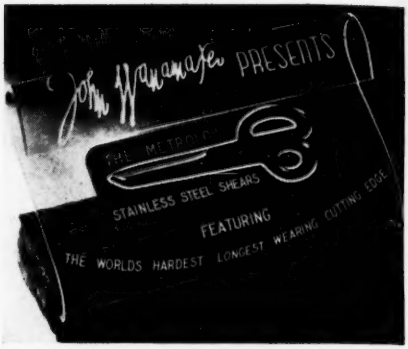
Newcomb-Detroit offers two types of water type spray booths for tests. One type incorporates the tube type design which embodies large vertical tubes through which the paint laden air is drawn. Within each tube are two large (15 g.p.m.) water spray nozzles directing the water spray against the vertical flow over air in order to separate the paint pigments from the exhaust air. Above the water tubes are moisture separator plates and a built-in fan. The tube type spray booth design is the assembled unit type, for mounting on a sludge tank and for assembly with a recirculating pump.

Another spray booth design in the laboratory is the Uni-Wash type which eliminates the use of the water pump in the washing process. The water is drawn by a suction fan into conical tubes where it is thoroughly washed before passing through moisture separators and through a built-in fan. This booth is generally used for down-draft booth designs.

Shears Display Features Flock-Finished Base

IN fabricating the custom-built displays being used to introduce a new line of stainless steel shears manufactured by the Metroloy Corporation, the Lakeside Plastics Co., Duluth, Minn. is using Claremont rayon flock to finish the metal bases of the displays. The velvet-like finish provided by the flock combines with the bent sheet of clear plastic material used for the top of the display to provide a rich setting for the new product.

The entire unit is lighted by a fluorescent unit hidden in the base and operating on the edge-lighting principle made possible by the use of the plastic. When lighted, the printed and engraved lettering on the plastic panel glows softly and bring out the warm, knapped texture of the flock finish.



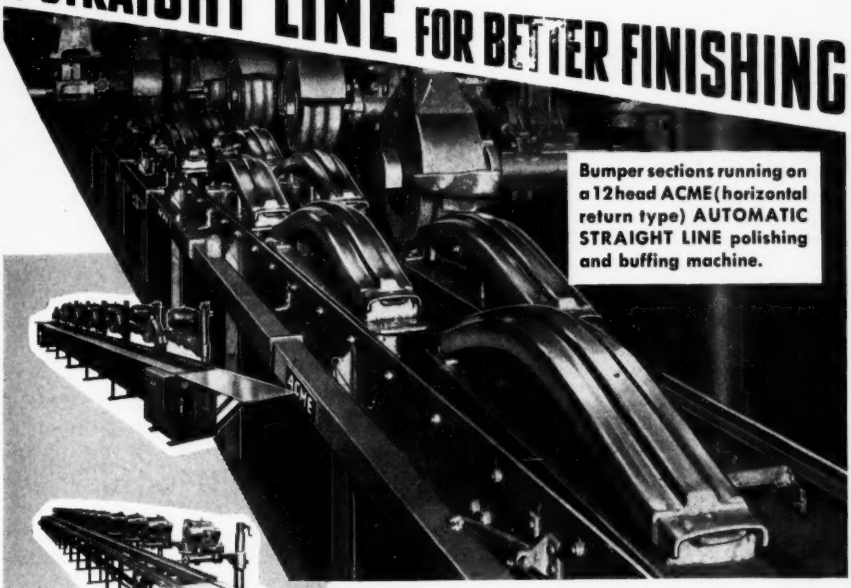
Clear plastic shears display with flock-finished metal base

Richardson-Allen Selenium Rectifiers is the subject of a looseleaf catalog published by the Richardson-Allen Corp., 15 W. 20th St., New York 11, N. Y. The catalog covers the scope of u[illegible] of selenium rectifiers in the plating field and in general industry, explains their operations and advantages, and includes a questionnaire for obtaining information on rectification problems. Copy free upon request.

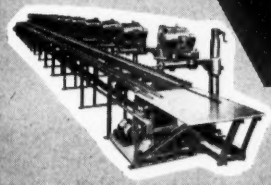
"Zincilate—The Self-Protecting Coating" is the title of a 20-page brochure published by Industrial Metal Protectives, Inc., 137 N. Perry St., Dayton 2, Ohio. In addition to fully discussing the properties, features, and advantages of Zincilate, an anti-corrosive coating which is said to afford 20 years of protection to ferrous metals against all common corrosive forces, the brochure contains numerous illustrations of metal equipment and structures to which the coating has been applied, including bridge structures, railroad cars and rails, water towers, steel framework of factory buildings, gasoline refinery structures, etc.

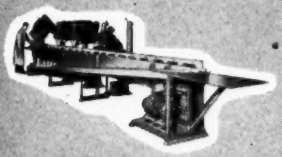
Copy of the brochure is available free to individuals addressing request on their company letterheads.

A STRAIGHT LINE FOR BETTER FINISHING



Bumper sections running on a 12 head ACME (horizontal return type) AUTOMATIC STRAIGHT LINE polishing and buffing machine.





Horizontal return, over and under, and loose fixture with power return are straight line arrangements that can be furnished.

ACME AUTOMATIC STRAIGHT LINES have proven, in plant after plant, to be the short cut to increased production and finer finishing. Whatever the item, if it's adaptable to straight line finishing, you can depend on an ACME AUTOMATIC to speed up production in your polishing and buffing department. In addition, ACME builds all types of Semis and Rotary Automatic polishing and buffing machines.

Send samples and details for recommendations as to the most efficient automatic machine operation.

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NEWS of the Industry

Wyandotte Representatives Hold "Refresher" Clinics

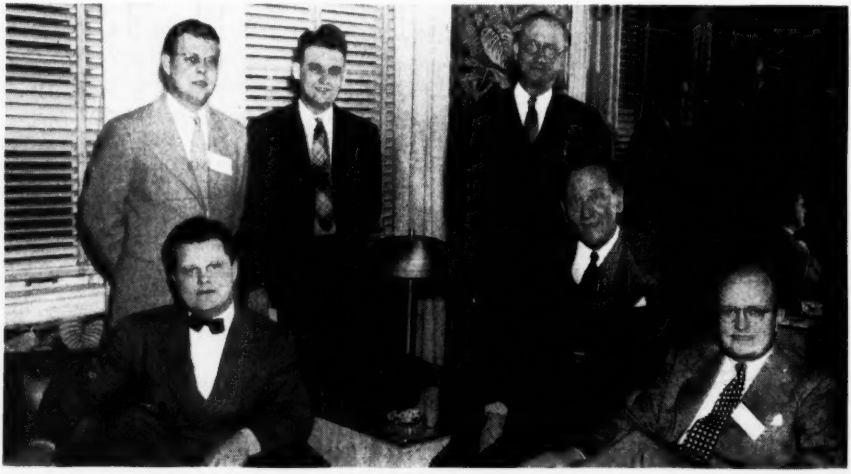
The representatives of the J. B. Ford Division of Wyandotte Chemicals Corporation are currently attending sales and service "refresher" clinics. C. B. Robinson, vice president in charge of sales of the J. B. Ford Division, accompanied by home office executives, is directing a program that covers product "stretching" uses of Wyandotte products in the industrial, food and beverage, laundry, and maintenance industries.

Clinics are being held in New York, Pittsburgh, Atlanta, Chicago, Kansas City, Indianapolis, and Toronto. When all clinics have been held, the nearly 200 representatives of the Ford Division of Wyandotte Chemicals will have completed a thorough three-day refresher course covering their service methods and equipment. Progress of the Wyandotte 25,000,000 expansion program is reported at each clinic by a management executive. During the sessions, service instructions regarding the newest Wyandotte metal cleaner—Emlon—are thoroughly checked.

Elected President of Duriron

At a recent meeting of the board of directors, Robert C. Schenck was elected president of The Duriron Company, Inc., Dayton, Ohio. William E. Hall, former president, became chairman of the board.

Mr. Schenck is the son of Pierce D. Schenck, one of the original founders of the company and its president up to the time of his death in 1931.



Wyandotte Industrial Department representatives attending the Central Region Clinic held in Pittsburgh: (left to right) Jack McCarthy, Columbus; Earl Soop, Technical Service Dept.; Chas. Chalfant, Dayton; John Rowan, Pittsburgh; Tom McHugh, Cincinnati; and Evans Schmeling, Assistant Manager, Industrial Department

GET THE FINEST IN INFRA-RED . . .

G-W Installation at Yale & Towne Mfg. Company plant, Stamford, Conn.

Getting better finishes—faster, cheaper—is a "must" to meet growing competition. Manufacturers seeking the finest infra-red system give the *whole* job—designing, building, and installing of equipment—to Gifford-Wood. They know "going G-W"—getting G-W to put in a custom-built infra-red system—pays in many ways:

G-W systems mean high speed work—Heat is intensified directly upon the work while it is in transit. *G-W systems mean uniform finishes*—Through exact and skillful timing, heat is distributed evenly over the product, whatever its size or shape. *G-W systems mean savings*—When infra-red processing is performed smoothly—with all vital elements meshing—economy results.

Years of material handling experience—over 130 years of know-how in moving things faster, easier, cheaper—go into G-W systems. That, plus familiarity with the techniques of infra-red since their inception, makes an unique combination. When you put in infra-red, get the finest—"go G-W, from start to finish."

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To Serve as Ceramic Consultant

Herman H. Frahme, who resigned as plant superintendent and plant manager of the Chemical Equipment Division, General Ceramics and Steatite Corporation, to become vice president of the Northwestern Terra Cotta Corporation, will serve United States Stoneware as a consulting ceramic engineer, according to an announcement made by Howard Farkas, vice president of U. S. Stoneware.

Herman H. Frahme

Mr. Farkas is a graduate of Rutgers University with a B.S. degree in ceramics, and a member of the American Ceramics Society, New Jersey Ceramic Association, and Phi Lambda Upsilon.

Ferro Promotes Noble

C. D. Clawson, vice president in charge of sales and research, Ferro Enamel Corporation, Cleveland, announces the appointment of W. N. Noble as manager of the Frit Division. Mr. Noble succeeds Louis B. Hart who was recently appointed Ferro's West Coast sales manager with headquaters at Los Angeles.

W. N. Noble

After graduating from the ceramic engineering department of the University of Illinois in 1927, Mr. Noble served the Seegar Refrigerator Company, St. Paul; Chicago Vitreous Enamel Products; Porcelain Enamel Institute; and A. O. Smith Corporation. He joined Ferro in November 1933. During the war, Mr. Noble spent 3½ years with the Chemical Warfare Service as a captain.

Roxalin Flexible Finishes Combined with Interchemical Finishes Divison

Roxalin Flexible Finishes, Inc., and Interchemical Corporation announce that Roxalin's operations were integrated with Interchemical Corporation—Finishes Division on April 22, 1947. The resources of both firms, combined within the framework of Interchemical's Finishes Division, will provide users of Roxalin and Interchemical finishes with increased technical skills and manufacturing facilities.

Named Manager of Paint Advertising

The appointment of Michael J. Batenburg as manager of plant advertising for the Pittsburgh Plate Glass Company has been announced by E. D. Griffin, vice president in charge of the firm's paint division. Mr. Batenburg succeeds Edward J. Allee who served as manager for a 27-year period until his recent death.

Michael J. Batenburg

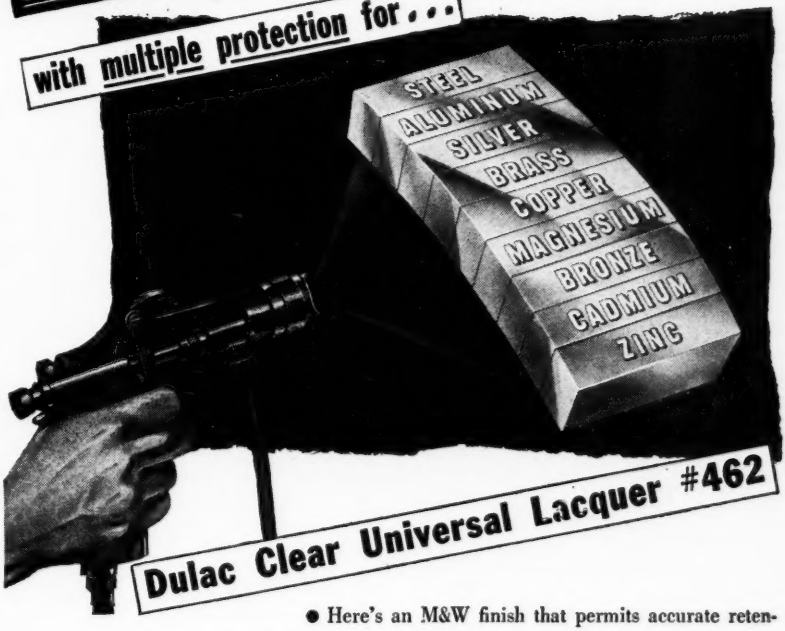
Associated with Pittsburgh Plate since 1939, Mr. Batenburg joined the firm's paint division as an industrial sales representative in Chicago, and later served in the St. Louis territory. During the past six years, he has been manager of sales service for the paint division with headquarters in Pittsburgh. Prior to joining the firm, he was associated with Cramer-Krasselt Advertising Agency at Milwaukee, Wisconsin.

Appoints Cleveland Agent

The Dampney Company of America, Boston 36, Mass., announces the appointment of the Combustion Equipment & Insulation Co., 1900 Euclid Ave., Cleveland, Ohio, as agent in the Cleveland area for the sale of "Apexior" and "Thur-ma-lox" protective coatings.

One Lacquer, so clear it's invisible,

with multiple protection for . . .



Dulac Clear Universal Lacquer #462

● Here's an M&W finish that permits accurate retention of all desirable surface qualities of most metals . . . that adds lasting protection against heat, cold, weather, corrosion, stain and perspiration — Dulac Clear Universal Lacquer #462. It's formulated to give good adhesion with either the spray, dip or brush method. And it fits into fast production schedules because in five to ten minutes this successful general purpose lacquer dries out of dust . . . hardens in one hour. For complete information, write for Technical Data Bulletin 110 or let an M&W technical consultant discuss your requirements privately with you.

PIONEERS IN PROTECTION

M&W Co. 18

. . . where industry goes with finishing problems

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PRODUCERS OF LACQUERS, ENAMELS, SYNTHETICS AND SPECIALIZED PRODUCTION FINISHES

Ferro Elects Four New Directors

The appointment of four new directors to the board of Ferro Enamel Corporation was announced at the company's Annual Board Meeting held April 15th at Cleveland, Ohio. New members include C. D. Clawson, vice president of the company, in charge of sales and research; F. S. Markert, vice president of the company, in charge of manufacturing; W. B. Lawson, president, treasurer and a director of Ferro Chemical Corporation (a wholly owned subsidiary of the company); and G. W. Wallace, comptroller and assistant secretary of the company.

(Upper Left) C. D. Clawson (Upper Right) F. S. Markert (Lower Left) W. B. Lawson (Lower Right) G. W. Wallace

C. D. Clawson, formerly associated with A-B Stoves, Inc., Republic Metalware and Chicago Vitreous Enamel Products Company, joined Ferro in 1930 and became one of its vice presidents, with primary responsibility of sales, research, and service.

Fred S. Markert came to Ferro in 1926 as a field engineer and then served as chief engineer and works manager prior to his current position as vice president in charge of manufacturing. He was formerly chemist and assistant superintendent of Belleville (now Peerless) Enameling & Stamping Company.

For ten years prior to 1940, W. B. Lawson was a vice president and director of The Harshaw Chemical Corporation. During 1940 he organized W. B. Lawson Incorporated which later was merged with the Ferro Chemical Corporation. Mr. Lawson has acted as president, treasurer and director of Ferro Chemical Corporation since the date of the merger, April 1, 1946.

G. W. Wallace, in addition to his duties as assistant secretary of the company, is also director and secretary of Ferro Chemical Corporation and director of Ferro Enamels (Canada) Ltd., Ottawa, Canada. Mr. Wallace has been associated with the company since June of 1937.

Divine Advertising and Sales Promotion Manager

The Divine Brothers Company, manufacturer of polishing and buffing wheels, machine finishing machinery and supplies, announces the appointment of William C. Beddoe as advertising and sales promotion manager. Mr. Beddoe will be in charge of advertising, sales promotion, and public relations for all divisions of the company.

Mr. Beddoe's previous experience includes 15 years as advertising and sales promotion manager of Congoleum Canada Limited and two years as promotion manager of James Lees & Sons.

Ransohoff Expands

In accordance with its program of expansion made necessary by the continued increase in the demand for its products, N. Ransohoff, Inc., Cincinnati, manufacturer of washing machines and equipment for the surface treatment of metals, has augmented its capacity substantially by the acquisition of another plant at 16 E. 72nd St., Cincinnati. The new plant (No. 2) comprises engineering and developing departments, testing laboratories, general offices, and small parts factory. Plant No. 1 at Township and Big 4 RR, Cincinnati, is being used for the manufacture of large parts, as well as assembly and shipping.

Present officers of the company are N. Ransohoff, president; John Strauss, vice president and treasurer; and Richard C. Wigger, secretary and general manager.

ROBINSON'S

24K GOLD CONCENTRATE

Liquid concentrate containing gold with conducting salts used for flashing or coloring articles with a 24K finish.

SPX No[illegible]OLD UNDERCOAT

Liquid c[illegible]ntrate containing gold with other metals and suitable conducti[illegible]lts. Deposits are somewhat harder than fine gold and are [illegible]ercoat on brass, copper, silver, and soft soldered work[illegible]al finish.

SPX[illegible] GOLD

Liqu[illegible]e containing gold with other metals and suitable cond[illegible] Deposits provide attractive, uniform pink color over[illegible]e of operating conditions.

POT[illegible]LD CYANIDE SALTS

(41%[illegible] and 67.5% Troy or Avoir.)

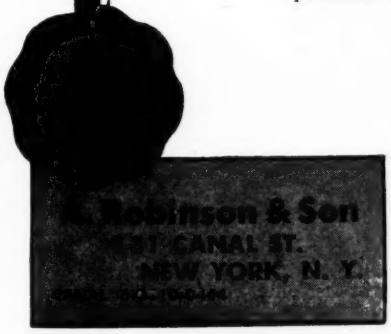
Thes[illegible]de salts are made from the h[illegible]ality chemicals a[illegible]overnment Treasury gold.

OTHER PRODUCTS

In addition to the products mentioned here,[illegible]N makes a complete line of gold concentrates that will [illegible]ous colors to meet individuals needs.

ROBINSON'S solutions and salts are bottle[illegible] sizes and weights to meet individual needs.

The certified gold content of all Robinson's products is plainly marked on every label.



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Gold Plating Solution ( )
Potassium Gold Cyanide ( )
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Cowles Technical Representative

Harold F. Fulton

The Cowles Detergent Co., Cleveland, Ohio, announces the appointment of Harold F. Fulton as technical representative in the New York State territory to handle sales and service work for the Metal Cleaner Department.

Mr. Fulton is a graduate of Miami University and has had wide experience in the metal-working industries. During the war he was employed by the Allegheny Ludlum Steel Corporation at its Dunkirk, New York, plant,

Appointed Assistant Sales Manager of EP

Gordon J. Berry, vice president and sales manager of The Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio, announces the appointment of Robert H. Ehret to the position of assistant sales manager.

Mr. Ehret will be responsible for handling headquarters sales negotiations. He joined the company on November 1, 1945 after 14 years of selling, applying, and installing apparatus for prominent electrical manufacturers.

Robert H. Ehret

Lucey to Handle Detrex Export Sales

Foreign correspondence and export sales of the Detrex Corporation have been placed in the hands of Henry J. Lucey, sales manager of the oil-extraction division. His additional duties will place Mr. Lucey in complete charge of following up foreign inquiries and sales in all of the company's three major divisions; namely, industrial metal cleaning, dry cleaning, and oil-extraction. He will work under W. W. Davidson, vice president in charge of sales and advertising.

Henry J. Lucey

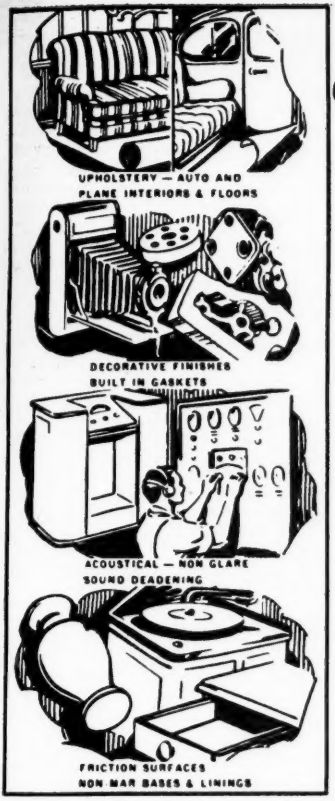
Mr. Lucey came to Detrex in July 1944 from Washington where he was with the WPB in charge of allocating chlorinated solvents. He received his bachelor of science degree in chemical engineering from the Massachusetts Institute of Technology. At one time, he was vice president of the Curtin-Howe Corporation, a subsidiary of Westvaco Chlorine Products Corporation.

Promotions at Cee-Bee Chemical

Promotions for two chemists at the Cee-Bee Chemical Company, Los Angeles, manufacturer of specialized cleaning materials, have been announced by C. D. Black, executive vice president. Keith Whitcomb has been made technical director and Joseph F. Hart has been advanced from technical director to manager of Cee-Bee Chemical's new department of sales engineering.

Mr. Whitcomb, a member of the American Society for Metals and American Chemical Society, was formerly research chemist for Ryan Aeronautical Company, San Diego, and chief chemist of the Marine Air Corps station at El Toro, California.

Mr. Hart, an active member of the American Chemical Society and the American Electroplaters' Society, has been working in industrial chemistry for 23 years, going from pure research to the practical application of scientific principles to specialized cleaning and processing problems. He was a research chemist for Parke Davis and a testing engineer with the U. S. Bureau of Standards, and was also chief chemist of Kelite Products, Incorporated.


UPHOLSTERY — AUTO AND PLANE INTERIORS & FLOORS
DECORATIVE FINISHES BUILT IN GASKETS
ACOUSTICAL — NON GLARE SOUND DEADENING
FRICTION SURFACES NON MAR BASES & LININGS

Rayco Flock synthetic finishes

MOHAIR

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Rayon Processing Co. of R. I., Inc.

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182 Jarvis St.
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Jensen Sales Engineer and Directing Consultant

The appointment of Burtron Zook as sales engineer and directing consultant has been announced by Jensen Specialties, Inc., 9331 Freeland Ave., Detroit 27, Mich., manufacturer of "Dual Heat" infra-red ovens and conveyors. Mr. Zook, who has a rich background of engineering and sales experience, has been actively associated with infra-red since the early days of industry.

Burtron Zook

From 1935 to 1943, Mr. Zook was connected with The Fostoria Pressed Steel Corp., Fostoria, Ohio, as sales promotion manager and manager of infra-red sales. He then joined The Bearing & Transmisison Co., Findlay, Ohio, devoting his time to the engineering and sales of conveyors and other materials handling equipment. In January 1947, Mr. Zook left this firm to join Jensen.

Elected President of Carborundum

At a recent meeting of the board of directors of The Carborundum Company, H. K. Clark, formerly executive vice president, was elected president of the company, succeeding Arthur Batts who has been elected chairman of the board. Announcement is also made of the election of Edwin R. Broden as vice president in charge of operations, a member of the board of directors, and a member of the executive committee of which President Clark becomes chairman.

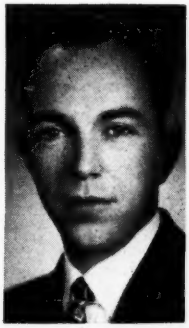
Further changes in Carborundum personnel include the appointment of William Hall Wendel as assistant to Messrs. Clark and Broden as vice president in charge of all plant operations. Otis Hutchins has been retired as technical director and is succeeded by Harry C. Martin, previously assistant technical director. Assuming the newly created title of administrative assistant to the technical director is Donald G. Foot.

Moreover, Edward R. Newcomb has been appointed director of sales engineering of the coated abrasive division throughout the United States. Boyd H. Works has been named director of sales engineering for the United States and Canada for the bonded abrasive division. S. S. Diemer, who for many years served under the title of purchasing agent, has been promoted to the office of manager of purchases, and Richard Kimball, who had been assistant to former President Batts, becomes assistant manager of purchasing. William E. Blake, who had been assistant to Mr. Diemer, assumes the title of purchasing agent.

In the technical division, George J. Easter, formerly director of research, has been appointed manager of research and development, with Charles Wooddell and Garret VanNimwegen as assistant managers. Henry R. Power, previously chief chemist, has been promoted to the position of manager of laboratories, with F. P. Ronca and Walter G. Lautz as assistant managers. Fred A. Upper has been advanced to the post of manager of manufacturing technical service. Reporting to Mr. Upper is Arthur H. Prey, who has been appointed assistant manager of manufacturing technical service.

Martin Joins Enthone Engineering Staff

John J. Martin, Jr. has joined the engineering staff of Enthone, Inc., 442 Elm St., New Haven, Conn., to work on customer service problems attendant with plating equipment and also to assist on the engineering design of plating equipment. Mr. Martin received his degree in mechanical engineering from Yale University in 1940, and served in the armed forces for 5 years, being discharged with the rank of Lieutenant Commander in the submarine service.



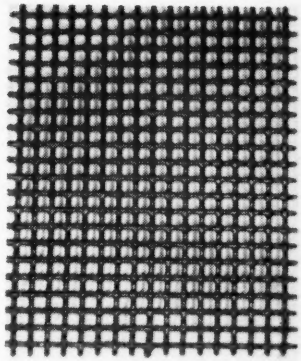
John J. Martin, Jr.

Mr. Martin is a member of the American Society of Mechanical Engineers and the Yale Engineering Society.

RUBBER PROCESSED ON METAL

Rubber Insulated Material Handling Screens

Furnished to size for bottom of tote pans. Prevent scratching or disfiguring plated or precision finished surfaces. Allow drainage. Unexcelled as non-skid separators. Available also in expanded metal.

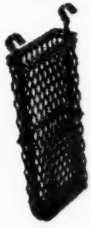


ANY PRODUCTION PART OR PRODUCTION PROCESSING EQUIPMENT CAN HAVE RUBBER APPLIED TO THE SURFACE

★ **Irregular surfaces; concave, convex, sharp angles, etc., can be covered partially or entirely. ARCO rubber offers positive coverage to any desired thickness insulating for electricity, sound or contact, corrosion, abrasion or shock.**

You can use ARCO rubber insulation: (1) to protect parts and equipment, (2) on handling equipment to protect precision or delicate surfaces, (3) to conserve plating materials.

STANDARDS-*FURNISHED COMPLETE OR YOUR EQUIPMENT RUBBER PROCESSED*



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PLATING AND PICKLING TANKS

TANK GRIDS AND SCREENS

PLATING RACKS

DRUMS AND PAILS

AUTOMOTIVE RUBBER COMPANY, INC.
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Hilo Chief Chemist

Dominick D. Razzano has been advanced to the position of chief chemist of the Hilo Varnish Corporation Research and Development Laboratories, according to an announcement by Carl J. Schumann, president. Mr. Razzano has been with Hilo since 1934 when he started as a laboratory assistant.

During the war, Mr. Razzano assisted Dr. Joseph J. Mattiello, technical director of Hilo, in solving research and development problems connected with paints, varnishes, and lacquers used on Quartermaster Corps equipment. He is a member of the American Chemical Society and New York Paint and Varnish Production Club, and is serving on Committee D-1 of the American Society for Testing Materials.

Dominick D. Razzano

Despatch Oven Head Dies

Herbert L. Grapp, 52, president of the Despatch Oven Company, Minneapolis, died unexpectedly March 22 while on a vacation trip to California. An air force veteran of World War I, Mr. Grapp joined his father in developing and expanding the Despatch Oven Company. During World War II he served as manager of the firm and last year was elected president.

Mr. Grapp was instrumental in building up a large national organization for Despatch, with headquarters and factory in Minneapolis, a field engineers' office in Chicago, and engineering representatives in principal U. S. and foreign cities. He was active in veterans organizations, served as vice commander of Flotilla No. 2 (Coast Guard Auxiliary), and was a mason and shriner.

New West Coast Solvent Supply

An entirely new source of supply for its "Perm-A-Color" and "Triad" metal degreasing solvents is announced by the Detrex Corporation through W. W. Davidson, vice president in charge of sales. A new chemical manufacturing plant, located on the Pacific Coast, is starting its initial flow of degreasing solvents to the western manufacturing plants. The entire output of the plant will be devoted to non-flammable, stabilized, chlorinated hydrocarbons for high speed, thorough cleaning in the metal and dry cleaning industries.

Offices and warehouses distributing these solvents are located in Los Angeles and San Francisco, California; Portland, Oregon; and Seattle, Washington, under the management of S. B. Crooks. A staff of competent, experienced field representatives is maintained for consultation and service on any cleaning problem.

Pittsburgh Plate Veteran Retires

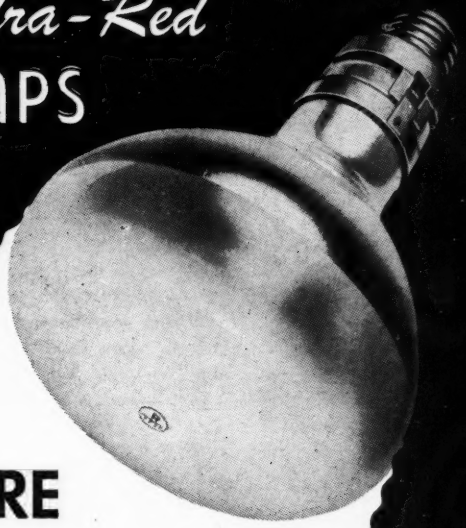
A veteran of 48 years in the paint industry, Edward C. Hyland, director of commercial research-industrial finishes for the Pittsburgh Plate Glass Company, has retired from active duty. Mr. Hyland joined the firm in 1899 as an office boy at the Milwaukee paint plant. During the next 11 years he served as entry clerk, estimator, shipping clerk, and purchasing agent. Promoted to manager of industrial sales in 1910, with headquarters at Milwaukee, he retained that position for 24 years, during which time he was instrumental in establishing the Industrial Finishes Sales Division.

In 1935, Mr. Hyland was transferred to the firm's general offices at Pittsburgh, Pa., where he served as assistant to the director of sales. Five years later, he was appointed director of commercial research--industrial finishes. During the war, Mr. Hyland was in charge of the Washington, D. C., office, Industrial Paint Division, which was established for the purpose of cooperating with the war agencies. He retained this position until his retirement.

Prufcoat Appoints Export Distributor

Prufcoat Laboratories, Inc., Cambridge, Mass., announces the appointment of the United States Rubber Export Co., Ltd., as exclusive export distributor for Prufcoat protective coatings and Pruftite transparent waterproofing.

New RADIANT HI-HEAT
R40 *Infra-Red* LAMPS



The symbol of quality in lamps

for

SEVERE
Industrial Drying Service

Radiant Hi-Heat Infra-Red Lamps assure uninterrupted production and safer, more economical oven operation. Special glass withstands moisture, fumes, rough handling, and sudden temperature changes which ruin ordinary lamps. Made in 250w and 375w sizes with rugged medium ***clamp*** bases. Install a few Radiant Hi-Heat Lamps next to your present lamps and watch replacement costs come way down. For quick delivery, write, wire or phone.

R40
Weatherproof
HI-FLOOD LAMPS

RADIANT LAMP CORPORATION 300 Jelliff Ave., Newark 8, N. J.
CHICAGO LOS ANGELES

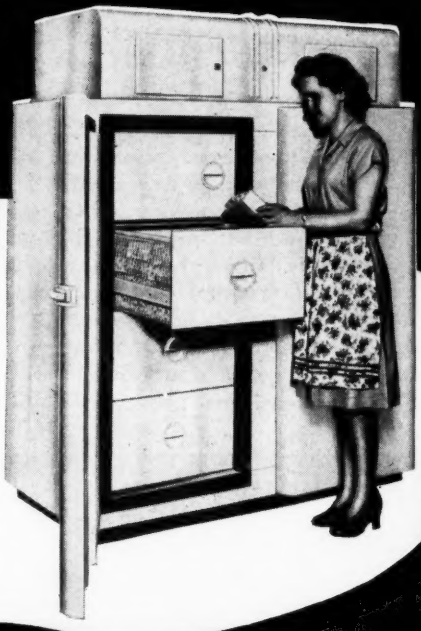
Manufacturers of Lamps for

PROJECTION • SPOTLIGHT • FLOODLIGHT • EXCITER • MOTION PICTURE PRODUCTION • AERONAUTICAL • GENERAL SERVICE

finishes that aid in appearance and utility

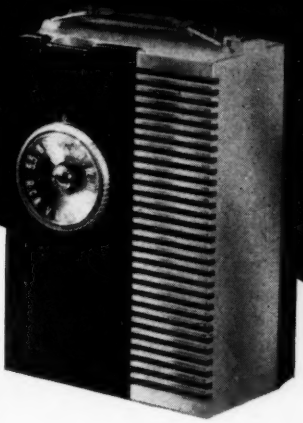
So as to enable it to readily blend with the machine on which it is installed, this 1/10 h.p. motor has a black enamel finish which also affords resistance to oils, grease, and shop dirt.

(Photo courtesy L & R Manufacturing Co., Arlington, N. J.)



Featuring a capacity of 32 5/6 cubic feet, the locker type frozen food cabinet shown here includes a baked white enamel exterior casing and an interior liner of matte-finish aluminum.

(Photo courtesy York Corp., York, Pa.)

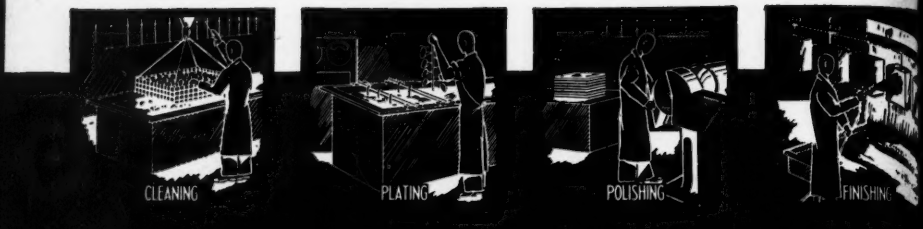


Known as the "Solitaire," the pocket-size personal radio shown herewith measures 6⅝ x 4⅝ x3¼ inches in size and includes a front panel of highly polished catalin plastic and a column of horizontal bars of 24-karat gold electroplating, the latter covering the grill. A wide ornamental gold-plated band encircles the set.

(Photo courtesy RCA Victor, Camden, N. J.)

The ventilated and durably constructed aluminum umbrella shown herewith is finished with high gloss enamels in attractive color combinations of red and white, blue and white, green and white, or yellow and white. The enamel finishes are infra-red baked.

(Photo courtesy Kool-Vent Aluminum Umbrella Corp., Pittsburgh 22, Pa.)

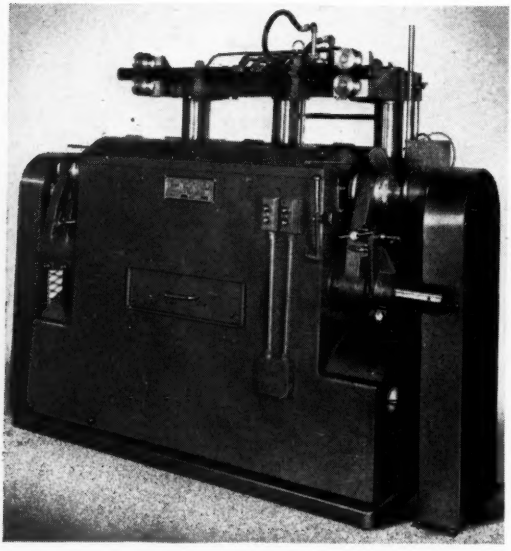


Central Model 4 Mirror-Finishing and Glazing Machine

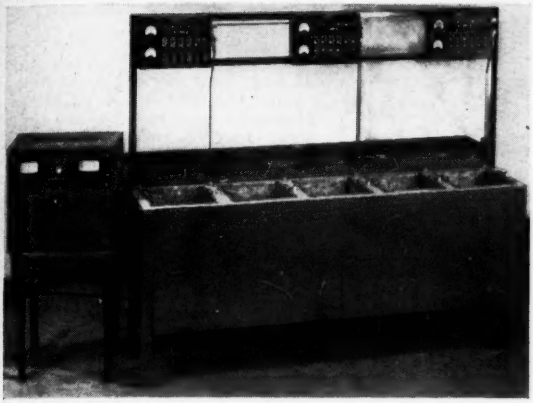
Designated as the Model 4, a hydraulically-operated precision-built mirror-finishing and glazing machine for knives, blades, slicers, scrapers, wrenches, hack saw frames, flat-iron bases, and other flat surfaces is now being offered by the Central Machine Works, Inc., Worcester 8, Mass. Designed for simple adjustment without the use of special cams or tools, the machine is said to operate quietly, with a minimum of vibration and hydraulic shock. It is equipped with self-aligning ball bearings that are sealed against foreign matter, and rolls which can be quickly aligned. Push-button switches are provided for use in actuating the machine.

The arbors of the unit are driven direct through a V-belt from electric motors shielded in the base of the machine. Roll pressure is automatically varied as required throughout the working stroke. The offset bearing design of the machine allows for the accommodation of 4 to 8-inch rolls which can be opened and closed automatically, if desired, at the end of the working stroke. The speed and length of the stroke can be changed instantly. To ensure safety and cleanliness in operation, the rolls are guarded. A built-in waste receptacle is also provided.

Designed for safe loading from either end, the Central Model 4 Mirror - Finishing and Glazing Machine is of steel-welded construction and is finished in standard machine gray. The unit has a vertical working stroke of 0 to 18 inches and occupies a floor space of 36 x 69 inches.



Central Model 4 Mirror-Finishing and Glazing Machine



"Specplater" Plating Unit

"Specplater" Plating Unit

A complete standard compact five-tank electroplating unit which requires only connection to gas, water drain, and plating current for operation, to be known as the "Specplater," is announced by the Special Chemicals Corp., 30 Irving Pl., New York 3, N. Y. The unit measures 84 inches long x 30 inches wide x 70 inches high from the floor to the top of the rheostat holder. The plating tanks are set in a working table measuring 34 inches high.

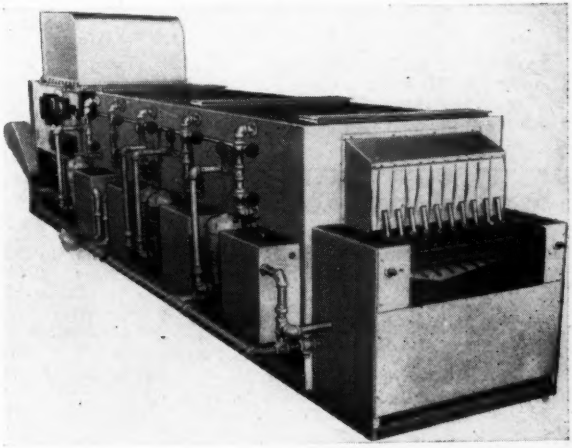
The Specplater can be placed against a wall, under a radiator, or in front of a window. The rinsing tank unit is connected in the rear with a removable overflow outlet for a drain wide enough to accommodate up to 12½-inch O. D. individual tanks. The rinse tank is located in the rear so that no sweating occurs but is situated within easy, comfortable reach of the operator.

The stainless steel plating tanks are equipped with handles for easy removal, and each tank has inside dimensions of 12 x 12 x 12 inches. The plating unit features streamline anode and cathode connections, and the anode rods are so designed as to bring the anodes in the corners of the tank to prevent burning of the work when circular racks are used. The bus bar connection is scientifically arranged and protected under the table. Moreover, the Specplater is constructed to prevent solution from dipping on the anode and cathode rods, and is supplied with a rectifier or in component parts.

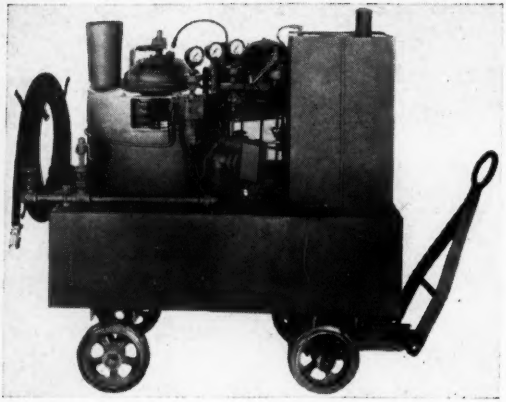
Optimus No. 100 Flat Conveyor Type Metal Washer

Designated as the No. 100, a flat conveyor type washing machine which is designed to handle the cleaning and processing of metal parts prior to plating has been introduced by the Optimus Equipment Co., 133 Church St., Matawan, N. J. The machine is arranged to perform a sequence of related operations in seven consecutive steps; namely, hot alkali wash, drain, hot water rinse, warm cyanide wash, cold rinse to sewer, hot rinse, and dry.

The machine accommodates metal parts directly from processes, such as



View of Optimus No. 100 Flat Conveyor Type Metal Washer from loading end



Oakite-Vapor Improved Steam-Cleaning Unit

polishing, and feeds them directly to the plating machine. The two hot rinses are connected in sequence, thus affecting operating economy. The conveyor can also be built with flight bars for baskets and individual pieces or with a mesh belt for any type of parts in bulk or individual pieces.

The Optimus No. 100 Flat Conveyor Type Metal Washer measures 35 feet long x 6 feet wide x 7 feet high overall and is designed with a belt speed of 4 feet per minute for a production in excess of 100 parts per minute. The machine, however, can be adapted to a wide range of speeds and types of treatment.

Oakite-Vapor Improved Steam-Cleaning Unit

Product of Oakite Products, Inc., 20 Thames St., New York 6, N. Y., the Oakite-Vapor Improved Steam-Cleaning Unit illustrated herewith is designed for use in cleaning and paint stripping a wide variety of industrial equipment and plant facilities. The unit, an enclosed-coil type down-draft flame steam generator, is arranged to deliver a hot vaporized spray in either a wet or dry state under pressures up to 200 lb. It is said to generate sufficient steam-cleaning pressure to operate two steam guns simultaneously.

According to the manufacturer, the improved model incorporates simplified grouping of gages and controls; a redesigned piping system; and a compressed-air valve accessory for two-minute anti-freezing of the entire water-steam system. A 12-gallon capacity fuel tank provides ample steam generation for an uninterrupted eight-hour two-gun cleaning cycle. After initial throttle setting, the unit operation is completely automatic. A down-draft flame in a triple-insulated fire chamber provides for rapid, economical steam generation (100 lb. in one minute). A standard dual-chamber steam gun is furnished with the unit; the cleaning solution is aspirated through the gun from a separate solution tank, by-passing the steam coils and totally eliminating coil clogging by the cleaning compound, it is claimed. Ample reserve power of the unit is said to provide for silent, vibrationless operation.

The Oakite-Vapor Improved Steam Cleaning Unit is said to successfully reduce cleaning time in such jobs as steam cleaning large work before pickling; cleaning metal parts before treating surfaces for storage; cleaning electric trucks, hoists, chains, and conveyors; cleaning salvage metals; and cleaning water-wash spray booths, baffles, and walls. The unit is also said to provide an economical means for cleaning shop floors, walls, ceiling, and loading areas, as well as trucks and cars in company garages.

The unit is available as a stationary model; mounted on shop-wheel chassis for around-the-plant portability; or mounted on trailer-type chassis for use at location away from the shop or plant. A ¾ h.p., 60-cycle, 110-220 volt a.c. motor is rigidly mounted on the unit. For special applications, alternate motive power includes a self-contained gasoline engine, where power source is unavailable, or special ¾ h.p. motors.

GOLD PLATING SOLUTIONS

In All Colors

Guaranteed 100% Pure Gold Content
Troy Weight - Color Constant
Tarnish Resistant
Proven Quality by the Acid Test

Write or call our experts about your plating problems

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114 Lexington Ave., New York 16, N. Y.
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MICCROTEX

AIR-DRY RACK COATING

MICCROTAPE — An extruded tape with tapered edge to permit smoother overlapping and closer fit around shoulders. Unaffected through all plating cycles.

MICCROTUBE — An extruded tubing for use on straight or bent contact wires, also round splines. Fuses with Miccrotape into a perfect leakproof coating.

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Write for detailed bulletins on these MICCRO products.

See MICCRO PRODUCTS BOOTH 49, INDUSTRIAL FINISHING EXPOSITION June 23-27 • Detroit

✓*Check* THESE BASIC FEATURES:

MICCROTEX is a superior thermoplastic insulating material developed by experienced platers.

MICCROTEX meets the requirements of all plating cycles and phosphate coatings.

MICCROTEX may be dipped, brushed or sprayed with equal effect.

MICCROTEX is a black material with a high luster — highly resistant to plating solutions, acids and alkaline cleaners at boiling temperatures.

MICCROTEX is tough, resilient, and flexible — attains maximum adhesion without shrinkage.

MICCROTEX effectively minimizes dragout — is easy to use — saves time and material in application.

MICCROTEX is blazing a new trail in plating techniques . . . answering the great need for an air-dry rack coating that overcomes the difficulties commonly found in applying lacquers. Try it!

MICHIGAN CHROME *and Chemical Company*

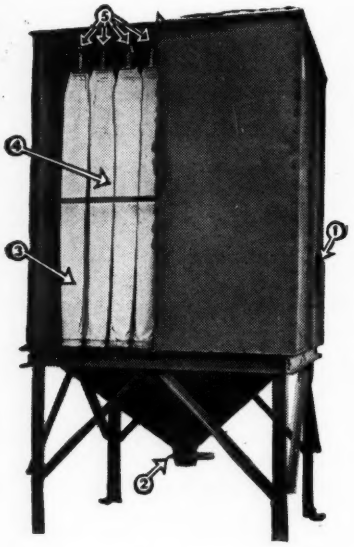
6340 East Jefferson Avenue • Detroit 7, Michigan

MICCRO Products

Developed and Manufactured by Experienced Platers

Dixie Tubular Dust Collector

Designed to trap, collect, control, or remove light fine dust resulting from metal cleaning, plating, and polishing operations, a tubular dust collector which is especially intended for protecting product finishes and precision machines and safeguarding employees is now being produced by the Dixie Mfg. Co., Inc., 1324 Russell St., Baltimore 30, Md. Simple in design, sturdily built, and positive in action, the unit, it is claimed, provides for unusually smooth, non-vibrating operation.



Cutaway view of Dixie Tubular Dust Collector showing vertically suspended filter tubes

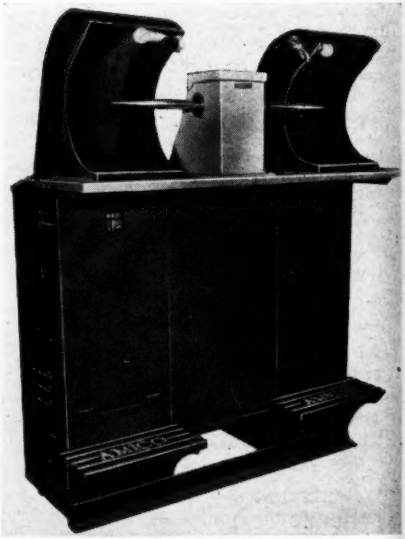
Referring to the illustration, dust-laden air enters below the bottom plate of the collector, as indicated at (1). A large portion of the dust settles in the hopper at the bottom, as shown at (2), while the finer dust particles rise and collect inside of the vertically suspended filter tubes of the unit, as designated at (3). The filtered air then passes through the porous walls of the tubes, as shown at (4), and is recirculated into the working area, while the dust is forced down into the hopper by a "snap-action" principle incorporated into each tube, as indicated at (5).

Amico Model 400 Polishing and Buffing Lathe

Designated as the Amico Model 400, a polishing and buffing lathe for jewelers, plastic manufacturers, platers, foundries, toolrooms, and laboratories is now being introduced by Ralph Hochman & Co., Newark, N. J. The machine is equipped with a self-contained dust collecting system and is available with a ball bearing 1,725 r.p.m. motor of various sizes from ½ to 3 h.p. of standard current characteristics. The motor is arranged to operate both the polishing head and the dust collecting system by means of A-type link belting.

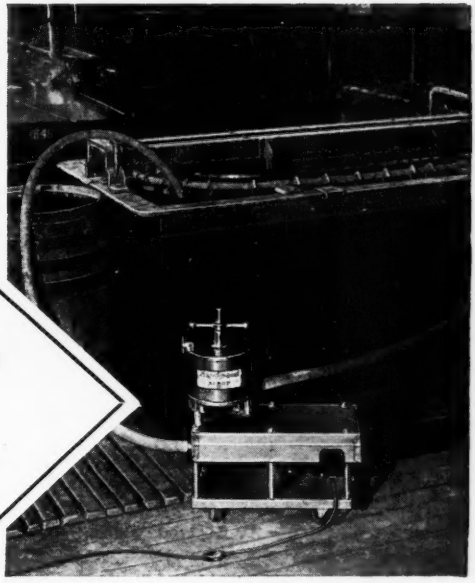
The polishing head and cover tray are of cast aluminum and are provided with two sets of standard ball bearings on which the spindle shaft revolves. Dust is drawn from the surface of the machine by a 4-inch duct in each individual collector. A removable receptacle on the intake side of the exhaust fan is said to trap any foreign object and prevent it from being drawn into the system. The dust-laden air is cleansed by being passed through water and is returned to the workroom through three louvers located in each side of the collecting system.

The spindle, which consists of turned, ground and polished steel, is tapered but



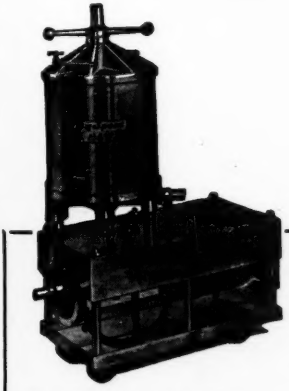
Amico Model 400 Polishing and Buffing Lathe

A "Sealed-Disc" Filter
in ACTION



This compact, portable, positive filter for *Plating Solutions*

A real space & time-saver



Note how motor and pump are completely protected from damage caused by spilled or splashed corrosive liquids. This *"Sealed-Disc"* Filter is complete as shown, ready for instant use.

Where space is at a premium, and the removal of dirt, dust, oil and sludge from plating solutions must be accomplished simply and efficiently, you'll find the *"Sealed-Disc"* Filter ideal in every respect.

The *"Sealed-Disc"* Filter has proved itself so outstanding in so many installations large and small that platers everywhere consider it a must for perfectly finished work.

In their judgment, no other filter measures up in compactness, portability, simplicity and general efficiency.

. . . WHAT'S MORE, *"Sealed-Disc"* Filters are capable of handling as large a volume of solution as conventional filters many times their size. They are completely enclosed, air-tight, eliminating loss of solution through leakage or dripping. Made in capacities from one gal. per minute up to thousands of gallons per hour. Filtering powders or slurry mixing tanks are not required.

Write for all the facts or see your regular plating supplier.

ALSOP
ENGINEERING CORPORATION
Filters · Filter Discs & Sheets · Mixers · Agitators
205 KEEN STREET • MILLDALE, CONN.

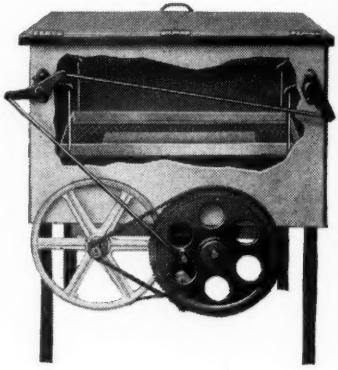
can be readily replaced with a straight-type spindle if desired. Each wheel has its own dust collector. Dust is collected in a fabric bag which is immersed in water on the exhaust end of the fan housing and can be readily removed for cleaning when necessary.

To reduce eye fatigue, the working table top of the Amico Model 400 is covered with linoleum, and the machine is finished on the exterior with green and cream paint. The construction of the unit provides two foot rests and ample room for two operators, as well as a brilliant non-straining light in each of the wheel hoods. If desired, the machine can be used as a grinder as well as a polishing lathe.

"Super-Soak" Metal Parts Washer

An active soaking type metal parts washer for the machine shop, toolroom, garage, airport, and so on, to be known as the "Super-Soak" is announced by The Super-Soak Co., 1441 S. 65th St., West Allis 14, Wis. According to the manufacturer, the washer provides for the automatic removal from metal parts of oil, chips, grease, dirt, carbon smut, sludge and so on, the cleaning solution penetrating into all corners, threaded holes, grooves, and similar areas.

The design includes a special heavily



Sectional view of "Super-Soak" Metals Parts Washer showing action of loading tray and simple mechanical lever-mechanism

constructed steel plate tank (cover attached) equipped with a ¼ h.p. single-phase electric motor, operating a simple mechanical "lever-mechanism" attached to the loading tray. The mechanism is arranged to automatically and slowly lower and raise the tray into and out of the cold liquid soaking solution.

In use, the operator places the dirty parts into the tray above the solution level, closes the tank cover, and presses a switch button. The washer is permitted to continue to operate until all parts are thoroughly cleaned, at which time the tray is stopped above the solution level before removing the clean parts. A simple, convenient method for screening the floating oil and scum is provided, as well as a flushout hole to permit periodic cleaning of the washer with minimum effort.

The Super-Soak Metal Parts Washer is supplied complete ready to operate, together with one small-parts basket.

Almco Motor-Driven Shaker Screen

A portable motor-driven shaker screen for use with deburring and finishing barrels is announced by Almco Incorporated,

BOOTHCOTE

cleans spray booths quickly, economically, safely!

Spray Boothcote on clean booth. Surplus paint can then be peeled off in sheets by any operator.

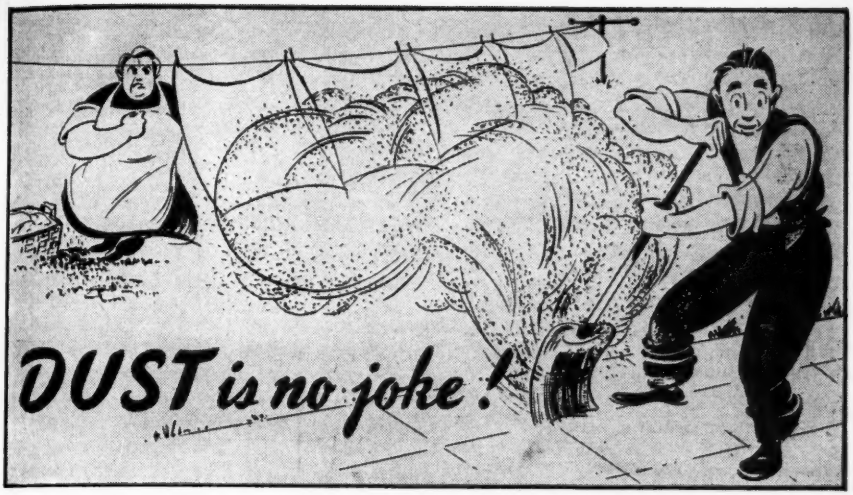
- Saves time and labor
- Time-tested; used for 8 years
- Mixed – ready to use

- Can be brushed or sprayed
- Non-inflammable; safe to store
- Does not flake off

Money back trial offer: 15 gals. $16.50 f.o.b. Buffalo or write for Circular.

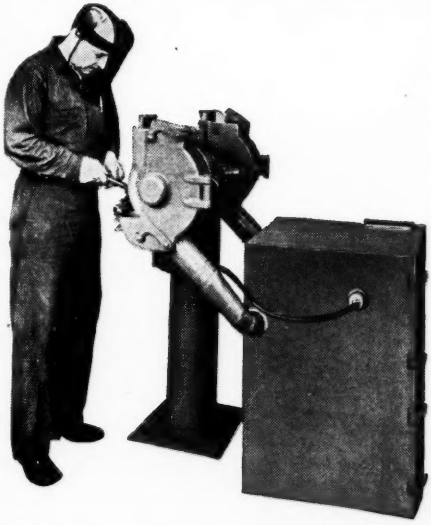
HYGRADE FOOD PRODUCTS CORP.

Boothcote Div., 19 Stetson St., Buffalo 6, N.Y.



Dust can ruin the "good neighbor" policy in your plant. Solve this problem with

TORIT DUST COLLECTORS



TORIT Dust Collectors capture abrasive dust at its source and recirculate the cleaned air. Employees' health and efficiency are protected and possible damage to precision equipment is eliminated.

TORIT Dust Collectors come in sizes and capacities that fit all standard grinding, polishing and cut-off machines. Portable and self-contained they are easy to install and economical to operate. For complete information and the latest TORIT Catalog write:

TORIT

MANUFACTURING CO.

314 WALNUT ST. • ST. PAUL 2, MINN.

Almco Motor-Driven Shaker Screen

231 E. Clark St., Albert Lea Minn. According to the manufacturer, the unit quickly separates the finished work from the tumbling medium, thus eliminating all hand screening and sorting.

The screen is driven by a ½ or ⅓ h.p. motor, and vibrates in an elliptical path at 380 reciprocations per minute. The length of movement is adjustable from zero to ¾ inch to meet all requirements. Interchangeable wire screens are available in standard sizes from $\frac{3}{4}$ to 2¼-inch openings, and are removable simply by pushing up and slipping out from between retaining lugs at each end of the frame.

The Almco Motor-Driven Shaker Screen is designed to normally serve three or four barrels and is provided with casters at one end and a handle at the other, thus enabling it to be readily moved where needed. Its overall height of 24 inches (exclusive of the handle) permits the unit to be placed directly under the tumbling barrels to separate the load directly on discharge, and sufficient clearance is provided beneath the screen for a mobile hoist pan to receive the screened material.

Du-Lite Improved Phosteel Process

According to the Du-Lite Chemical Corp., Middletown, Conn., new developments and recent refinements of the Du-Lite Phosteel Process enable an excellent bonding finish to be imposed on all shapes of iron and steel in 30 seconds at a temperature of 180 deg. Fahrenheit.

The improved process is said to retain its previous advantages of economy, simple operation, together with immediate availability.

Cowles "B" Cleaner

Designated as Cowles "B" Cleaner, a material which is particularly suited for cleaning steel, brass, bronze, copper, and aluminum is now being marketed by The Cowles Detergent Co., Metal Cleaner Dept., 7016 Euclid Ave., Cleveland 3, Ohio. This all-purpose washing machine cleaner is described as fast-acting, free-rinsing, medium pH, and dust-free.

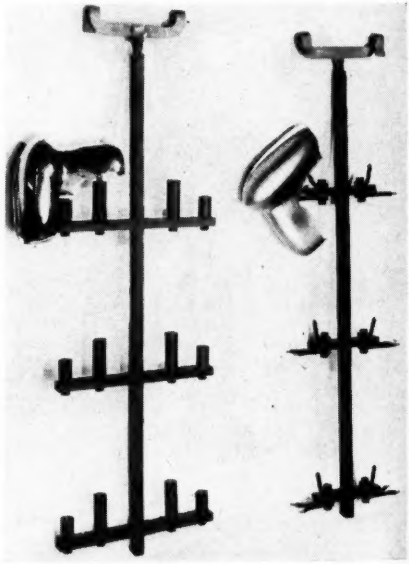
According to the manufacturer, Cowles B Cleaner is easy to control, does not foam excessively, and can be used in any type of washing machine.

Duggan Neoprene-Coated Plating Rack

Duggan Masking Devices, 2030 W. Fort St., Detroit, Mich., announces the addition of a Neoprene-coated plating rack to its line of selective plating, painting, and sandblasting devices. The coated rack is an outgrowth of the company's work with selective copper plating masks on aircraft gears which helped increase production on selective heat-treating applications during the war.

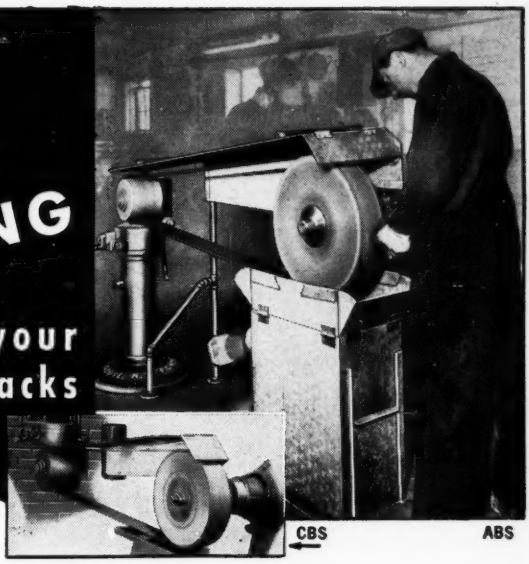
In the production of the coated rack,

Duggan Neoprene-Coated Plating Racks



FOR *Faster* POLISHING

Convert your Old Grinding Jacks



CBS ← ABS

Into

PORTER-CABLE BELT GRINDERS

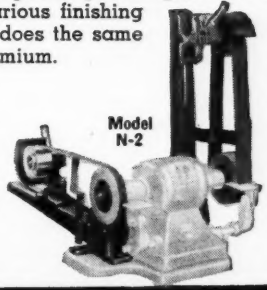
. . . With a Wide Range of Utility

Either of these Porter-Cable Belt Grinders will do an outstanding job on your clean-up or finishing operations. Whichever you choose, you will be sure that it will deliver more work—better work—and at lower cost—than any application of built-up or regular grinding wheels.

The ABS model, employing back-stand idler and composition pulley on jack spindle, can be erected right in a production line to handle a specific polishing job. Or it can be placed in a machining department to perform various finishing operations. With wall-mounted idler, the CBS model does the same job but keeps the floor clear where space is at a premium.

Makes Bench Grinders 3 Times More Valuable

Outstanding for burring, the N-2 attachment for bench grinder (opposite) is an all-around job that provides contact grinding on the wheel . . . flat-grinding on the platen . . . or contour-grinding on the flexible belt! For the spot where the clean-up jobs are varied, you can't choose a better piece of utility equipment. Quickly adjusted to either vertical or horizontal position.



Model N-2

Write for full information. Bulletin just issued!

PORTER-CABLE
MACHINE CO.
302-5 Wolf St. Syracuse, N. Y.

Belt grinding depicted on film "MACHINE of the AGE" Available for Exhibition FREE. WRITE!

the company is molding the same Neoprene materials which were used in the masks directly to the metal parts of the plating rack. This is done in a steel die on a hydraulic press with electrically heated platens. The Neoprene, which is milled from crude materials, is vulcanized, cured, and bonded to the metal in one operation. The rack also features replaceable adapters which are individually molded in the same manner. These adapters can be replaced with the simple operation of removing a sealing nut, which is also of Neoprene, and a small brass nut which provides the pressure contact.

D. C. Oxidizing Compound

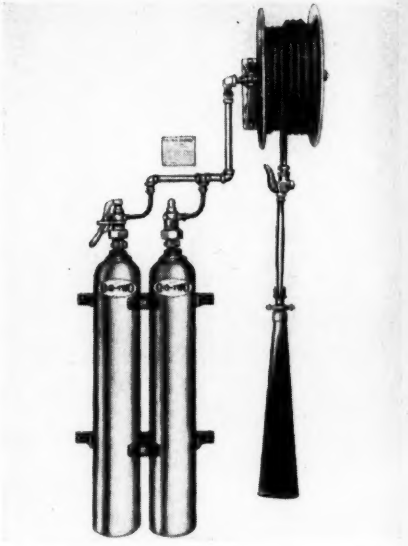
The D. C. Cooper Co., 1467 S. Michigan Ave., Chicago 5, Ill., announces an oxidizing compound for producing an attractive uniform black finish on steel parts which, it is claimed, will not peel, rub off, crack, or chip, and is rust resistant. According to the manufacturer, parts can be provided with a black finish of this type in a single immersion in a solution of the material for 5 to 15 minutes, with the dimensions of the parts being unaffected by the process.

D. C. Oxidizing Compound consists of alkaline salts which are mixed with water and heated. The finish afforded by the material is particularly recommended for metal cutting tools, machine parts, saws, bearings, screws, nuts, bolts, springs, guns, hammers, chisels, axles, radio parts, and automobile and aircraft parts.

C-O-Two Carbon Dioxide Hose Reel

An improved lightweight hose reel of the shockproof type for carbon dioxide systems is being made available in capacities for 50 to 200 lb. or more of carbon dioxide by the C-O-Two Fire Equipment Co., P. O. Box 390, Newark 1, N. J. The stamped brass and chrome-plated hose reel may be used with ½-inch high pressure hose of any length up to 125 feet or ¾-inch hose of any length up to 100 feet.

The hose reel and discharge horn may be installed adjacent to the cylinders containing the carbon dioxide gas or at a remote point. The handle of the fire-fighting nozzle is equipped with a "Squeez-Grip" valve for controlling the discharge of the carbon dioxide gas when working around a fire.



Fire Fighting System Incorporating C-O-Two Carbon Dioxide Hose Reel

A New Aid to Pickling

NEPTUNE

(Pickling Accelerator)

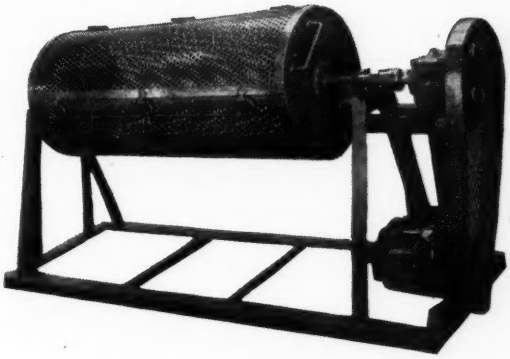
1. Reduces fumes
2. Conserves acid
3. Prolongs life of solution
4. Reduces drag out

THE WM. M. PARKIN CO., • Highland Bldg., Pittsburgh 6, Pa.

ROLOCK

PROCESSING CARRIERS

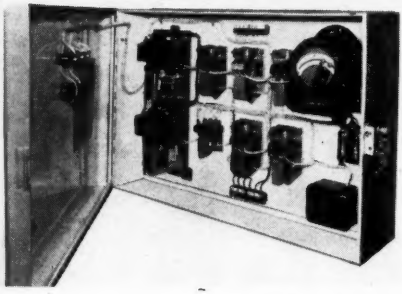
As an example of Rolock Custom-built Carrier design we show this sheet steel motor-driven Tumbling Barrel (15" dia. x 36") used to sort parts through holes of proper size. Barrels with other hole sizes are easily interchangeable. Catch pan fits on under frame. It's a time saver.



Rolock Carriers . . . baskets, trays, racks, crates and fixtures . . . save time, cut costs in handling metal parts. We will gladly recommend designs for specific duties . . . any exposure . . . from your description of finishing processes.

ROLOCK, INC.

1400 Kings Highway East, Fairfield, Conn.



Nankervis Electro-Reversal Control Unit

Nankervis Electro-Reversal Control Unit

A mechanism to reverse the polarity and to control a selected time cycle between positive and negative plating times is announced by The George L. Nankervis Co., 5442 Second Blvd., Detroit 2, Mich. Identified as the Nankervis Electro-Reversal Control Unit, the mechanism consists of a moistureproof cabinet in which are mounted various instruments such as complete timer controls, relays, discharge resistors, pilot lights, and so on, to control the output polarity of electroplating motor generator sets.

Used in conjunction with a cyanide copper plating solution, the Nankervis Electro-Reversal Control Unit, according to the manufacturer, provides for (1) smooth deposits made possible by reason that treeing, which usually occurs at high current density points, is immediately offset by the reversal phase of the cycle which levels off any nodules thus formed; (2) greatly increased allowable cathode current density, thus permitting the production of maximum plate thickness in a minimum period of time even though part of the process employs a deplating cycle; (3) improved plate thickness in recess or low current density areas; (4) pore-free deposits because of the alternating plating and deplating cycle effects; and (5) bright deposits because of the alternating cycles mentioned above.

ALLWOOD

"Vienna Brand" Lime

Made from Limestone that is identical in chemical analysis and geological structure with European Imported Lime. Tests show a "lime cake" made from Allwood "Vienna Brand" Lime equals the finish made from imported lime.

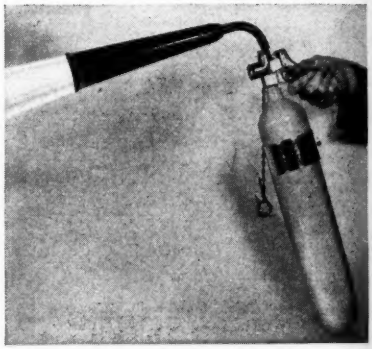
WRITE FOR FULL PARTICULARS

ALLWOOD LIME COMPANY

Manitowoc • Wisconsin

Alfco "Speedex" Fire Extinguisher

Known as the Alfco "Speedex," a fire extinguisher with contents weighing only 3⅝ lb. but which are said to expand upon release to 450 times their contained volume has been announced by the American-LaFrance-Foamite Corp., Elmira, N. Y. Measuring 3⅛ inches in diameter x 22 inches long overall, the unit is operated by means of a quick-acting squeeze-type valve which releases the carbon dioxide by means of palm pressure.



Alfco "Speedex" Fire Extinguisher

The carbon dioxide gas released by the extinguisher is said to be non-poisonous, non-corrosive, and odorless. Moreover, it is a non-conductor of electricity and will not freeze at any climatic temperature, the manufacturer claims.

The Alfco Speedex is described as an ideal medium for the extinguishment of small fires in oils and greases and in small electrical hazards. It is supplied fully charged together with wall hanger, screws, and record tag.

Black Arrow "Muff-Gun"

A spray gun specifically designed for the application of all types of heavy ma-

We are Pathfinders for Electro-plating
WITH PRECIOUS METALS

We have been leaders in research and development in the plating field for many years, particularly in the realm of the precious metals. Our contributions to the advancement of this art have been notable—the development of the process for plating with rhodium is one outstanding instance.

Electro-plating with platinum, rhodium and gold for special applications, notably in electronics, radio, radar, telephone and other means of communication, often require research and experiment. Here is where our long experience and familiarity with the peculiarities of the precious metals will be of great value to you.

Among our precious metal products for the plater are:

Rhodium Plating Solution
Platinum Plating Solution
Aurosal—Gold Oxide
Silver Cyanide
Potassium-Gold Cyanide 41% and 67%
Sodium-Gold Cyanide 46% and 71½%

BAKER & CO., INC.
113 Astor St., Newark 5, N. J.
NEW YORK 7 SAN FRANCISCO 2 CHICAGO 2

Black Arrow "Muff-Gun"

terials, to be known as the Black Arrow "Muff-Gun," is announced by The Black Manufacturing Co., Baltimore, Md. According to the manufacturer, the gun sprays approximately 10 per cent faster on pump hookups since obstacles in fluid passages have been reduced to a minimum. Fast spraying, plus the fact that minimum air is required by the gun, is said to make it unusually economical to operate. A sturdy, smooth flow of material is claimed to be obtained as a result of the improved nozzle and valve design.

The Black Arrow Muff-Gun is supplied in two models, designated as the B-2500A and B-2500L, which are identical except for the size of fluid and air connections, and may be used with either a pump or pressure hookup. Adapters are available for both fluid and air connections. The Model B-2500A has a ¾-inch male straight pipe thread on the fluid inlet, while the air inlet is a ⅜-inch straight pipe thread male. The fluid connection of the Model B-2500L is a ½-inch female tapered pipe fitting on the fluid inlet, while the air inlet is a ½-inch tapered pipe thread male. Each model weighs 26 oz., net and has a shipping weight of 2½ pounds.

M.S.A. Blastfoe Abrasive Helmet

The M.S.A. Blastfoe Abrasive Helmet, designed to provide comfortable protection against high velocity abrasives in shot or sand-blasting operations, is announced by the Mine Safety Appliances Co., Braddock, Thomas and Meade Sts., Pittsburgh 8, Pa. Approved by the U. S. Bureau of Mines, the helmet, which is of positive pressure design, employs compressed air under precise control of the wearer, thus making it simple to use.

The loose-fitting hood of the M.S.A. Blastfoe Helmet is made of rubber impregnated cloth and is held firmly to the body by two adjustable straps encircling the waist. The rigid headpiece of the helmet is fabricated of lightweight, durable aluminum with an inner open cradle of strong webbing which distributes the weight of the assembly evenly over the entire head. The cradle is easily and quickly adjustable to individual head size. A sweatband adds further comfort.

The cloth filtering unit inside the helmet can be readily removed for cleaning or replacement. A non-kinking air hose connects from the supply line to an air flow-control valve supported by a web belt at the wearer's waist, thus permitting convenient regulation of air flow to the hood. A "bump-proof" adjustment on the valve prevents the air setting from being altered accidentally.

The valve wheel of the Blastfoe Helmet is held in released position by a spring so that it must be pushed in by the wearer to engage and turn the valve stem. Objectionable odors and foreign material are said to be removed from the air supply by a replaceable cartridge filter. A screen cover protects the large area window from excessive abrasive wear.

M.S.A. Blastfoe Abrasive Helmet

SAVE ON WHEELS . . . STEP UP PRODUCTION

Speeds from 1,500 to 3,000 RPM are instantly available with the turn of the dial while the lathe is in operation. Polishing and buffing (cut-color-satin) can be done on one machine with no delays or lost motion.

The Hammond VRO Variable Speed Polishing Lathe definitely will step up production and improve finish. Maximum wheel economy is assured, too, because efficient peripheral speed can be maintained at all times — wheels can be used right down to the flanges before discarding.

Hammond

VRO
VARIABLE SPEED
POLISHING
AND
BUFFING
LATHE

the DIAL does it

WRITE FOR CATALOG!
Catalog showing all Hammond polishing lathes, abrasive belt, "OD" and automatic finishing machinery gladly sent on request. Write today!

See Hammond Equipment IN OPERATION at booths 65, 66, 67 and 68 at the Industrial Finishing Exposition, Detroit, June 23 - 27.

Hammond of KALAMAZOO
GOOD MACHINERY SINCE '82

Hammond Machinery Builders INC.

1622 DOUGLAS AVENUE • KALAMAZOO 54, MICHIGAN

Ideal "Kleenair" Air Filter Unit

Efficiently designed to remove all condensate as well as foreign matter from compressed air lines with a minimum of pressure drop, thus reducing finishing troubles such as blushing, blistering, scaling, spotting, and blemishing directly traceable to moisture, oil, or foreign matter in the compressed air supply, an air filter unit for use in connection with spray guns, airbrushes, and all air-operated tools is now being produced by The Ideal Airbrush Manufacturing Co., 124 W. 18th St., New York 11, N. Y. Known as "Kleenair," the filter is said to have no moving parts to wear out or filter packs to replace, and the filter media is constructed of porous stone especially designed for the filtration of air and gases. Non-corrosive metals are used throughout the design.

Ideal "Kleenair" Air Filter Unit

Available in two models designated as the F6 and F20 with capacity of 6 and 20 c.f.m. respectively, the Ideal Kleenair Air Filter Unit is provided with an attractive gloss black durable baked crackle finish and includes a convenient sturdy mounting bracket for attaching to the side of a spray booth or wall. All collected water, oils, and foreign matter can be easily removed by opening a drain valve with the air pressure on.

Where large quantities of cool clean air are required, batteries of F20 units in capacities of 40, 60, 80, 100, and 120 c.f.m. can be obtained. The Ideal Kleenair Filter Unit is furnished without regulators, gages, or air valves and is intended for use where pressure regulation is not necessary or where it is accomplished elsewhere. However, where pressure regulation is necessary, Kleenair Filter Units having air regulators, gages, and valves can be supplied. Such units are available in a variety of models for use with one or more spray guns, airbrushes, or other air-operated tools.

HARRISON
4A
COMPOUNDS
for
BUFFING and POLISHING

FASTER CUTTING — ECONOMY
INCREASED PRODUCTION
ON
CUTTING, CUT AND COLOR, AND
MIRROR FINISHING

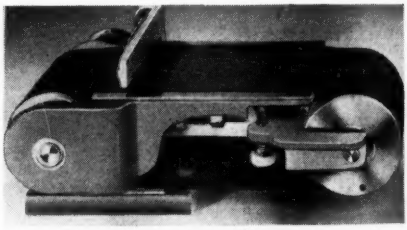
Send Us Your Problems
We'll Send Samples

Quality and Uniformity Always

HARRISON & CO., INC.
Haverhill **Mass.**

Woods Improved Model "40" Belt Sander

Improvements in the design of its Model "40" Belt Sander for operations on metals, plastics, rubber, and other materials are announced by the Woods Engineering Co., Norwalk, Conn. Said to be particularly useful for tool grinding, deburring and finishing of small parts, the unit can be easily adjusted for either horizontal or vertical operation and has a platen work area of 5 x 8½ inches. It is



Woods Improved Model "40" Belt Sander

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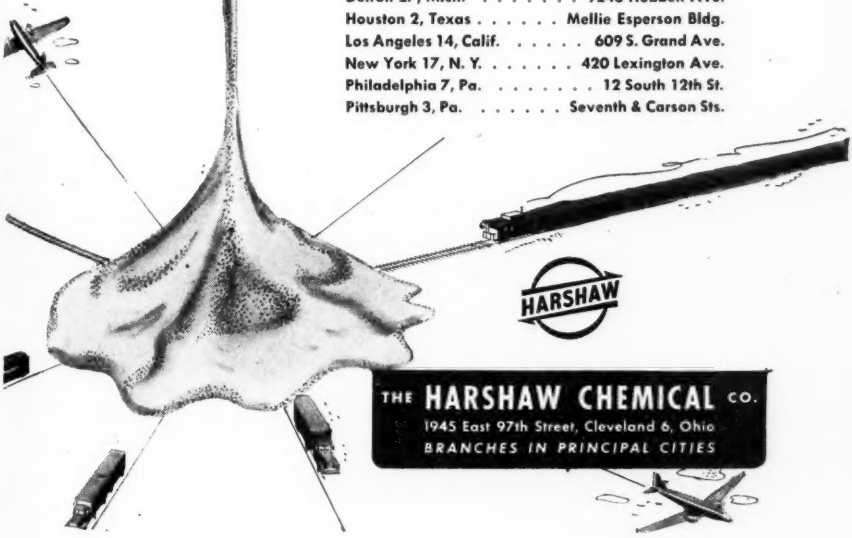
Los Angeles 14, Calif.	609 S. Grand Ave.
New York 17, N. Y.	420 Lexington Ave.
Philadelphia 7, Pa.	12 South 12th St.
Pittsburgh 3, Pa.	Seventh & Carson Sts.



THE HARSHAW CHEMICAL CO.
1945 East 97th Street, Cleveland 6, Ohio
BRANCHES IN PRINCIPAL CITIES

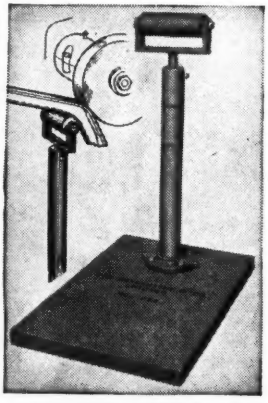
standardly equipped with a 4 x 36-inch abrasive belt.

The 4 x 4½-inch pulleys of the sander are machined from aluminum and are ball bearing equipped and accurately balanced for smooth operation. The pulleys are tested to 5,000 r.p.m. For belt tracking and tension, the sander is provided with a simple thumbscrew control. The work dam is adjustable to any angle; the work platen is reversible and can be used on either face.

The Woods Improved Model 40 Belt Sander occupies a bench space of 9 x 15 inches and weighs 17½ lb. net. It is supplied complete with one belt and a small positional dam. Hoppers, take-away chutes, and other accessories are readily available.

"Presto" Work Supporting Roller

Ease and speed in polishing long, heavy pieces are said to be provided through the use of the "Presto" Work Supporting Roller illustrated herewith, product of The Manderscheid Co., Dept. 101, 810 Fulton St., Chicago 7, Illinois.



"Presto" Work Supporting Roller

The unit consists of a rubber roller 8½ inches long x 3 inches in diameter which is mounted on a large portable base. A height adjustment from 32 to 40 inches in combination with the portable base affords a quick setup for the polishing of long, heavy pieces.

Styron Chrome-Lock Tubes

Designed to provide a protective blanket over chrome plating solutions, a line

Styron Chrome-Lock Tubes

of tubes extruded of Styron plastic is now being manufactured under the trade name of Chrome-Lock by The Udylite Corp., 1651 E. Grand Blvd., Detroit 11, Mich. Closed at each end to resemble miniature pillows, the tubes are floated on the chrome bath solution in sufficient depth to blanket the bath and thereby lessen considerably the escape of chromic acid in a fine spray. The lightweight tubes move apart easily when a rack of objects which are to be plated is lowered into the solution; they move back into place around the rack spine, completely covering the acid bath, while the objects are being plated.

In using the Styron Chrome-Lock Tubes, they are simply dumped into the chrome plating tank in a sufficient number to form a blanket of the desired thickness. The thicker the blanket of Chrome-Lock Tubes, the less is said to be the chromic acid loss. Approximately 1½ lb. of the tubes are required for a 1-inch blanket over 1 square foot of solution surface, and 3 lb. per square foot for a 2-inch blanket. The 3-inch tubes feature unusual resistance to acids and alkalis and are unusually light in weight and smooth textured.

According to the manufacturer, the tubes are unaffected in size, weight, appearance, or chemical composition by immersion for days in the chrome plating bath. In addition, Styron is claimed to be shatterproof, thereby preventing loss of the tubes by breakage.

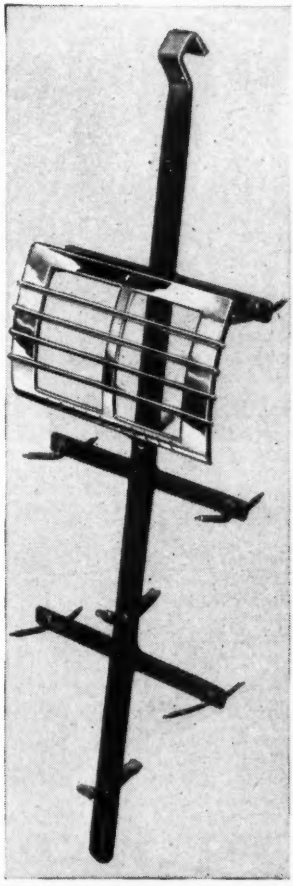
Easier to Insulate;

Easier to Patch!

BUNATOL is the low cost insulation for use on all types of electroplating racks. It's free dipping and requires a minimum of labor to apply. It has the toughness and resistance for long insulation life and a permanent flexibility which permits insulation of spring contacts.

BUNATOL rack insulation sticks to itself so repairs are merely a matter of cleaning the patch and brushing or pouring on new insulation to complete the repair. The patch makes a continuous film that rinses freely and gives perfect insulation.

May we send you complete information?

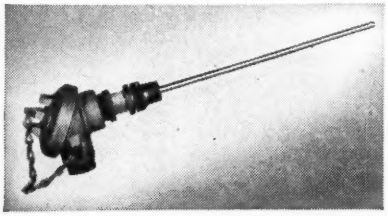


NELSON J. QUINN COMPANY, Toledo 7, Ohio

BUNATOL 785

L&N Platinum Thermohm

Designed for temperatures up to 1,000 deg. F., the L&N Platinum Thermohm (resistance thermometer bulb) illustrated herewith is now being marketed by the Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia 34, Pa. Said to be amply accurate for the most exacting industrial requirements, the unit is ruggedly and durably constructed and can be easily installed in ovens, tanks, ducts, or pipe lines.



L&N Platinum Thermohm

The corrosion-resisting stainless tube of the L&N Platinum Thermohm is claimed to afford ample protection for normal pressures and non-corrosive fluids. Where required, the unit can be used with protecting wells. The temperature coil is said to be thoroughly protected against contamination by moisture or gases.

The L&N Platinum Thermohm is equipped with a universal head that is designed to facilitate installation and connection, and is available in standard lengths of 6 and 12 inches.

Resinite All-Purpose Paint

Claimed to be scientifically compounded with the same type of resins used by the Army and Navy on tanks, ships, planes, and other equipment subjected to severest conditions of intense heat, extreme cold, salt air, salt water, and acid-laden fumes, a general-purpose paint which is designed to produce an unusually high gloss finish on a variety of products is now being produced by the Resinite Chemical Corp., Dept. 61 R, 2542 N. Lincoln Ave., Chicago 5, Illinois.

The paint is supplied in a range of popular colors and is said to be suitable for indoor and outdoor application where an unusually high gloss finish is desired.

"Steel-Grip" Handguard No. 15407

Especially designed for use in line production jobs where only light protection is required on the palm, first finger, and palm side of the little finger, the "Steel-Grip" Handguard No. 15407 illustrated herewith has been placed on the market by the Industrial Gloves Co., Danville, Ill. As shown, the guard is made so that the thumb and finger tips are free for picking up materials; the open-back construction provides for flexibility.

The Steel-Grip Handguard No. 15407 is made of split cowhide, which is described as an excellent wearing leather, and is steel stitched throughout. The elastic web band on the back of the guard provides for a snug, cool, comfortable fit and enables the guard to be easily slipped on or removed from the hand. The guard is available in sizes for men and women, in pairs or for right or left-hand use only as required on certain operations.

"Steel-Grip" Handguard No. 15407

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New Literature

Accident Prevention Manual for Industrial Operations. Published by National Safety Council, 20 N. Wacker Dr., Chicago 6, Ill. 544 pages. 400 illustrations, charts, and tabulations.

Believed to provide one of the most comprehensive treatments of the fundamentals of safety, this manual is intended as a handy and authoritative source of accident prevention information for safety directors, safety engineers, and foremen. Each of the 14 major divisions of the book is preceded by a summarizing index for the quick location of general topics, while a 12-page detailed alphabetical index at the rear affords access to details.

Although prepared primarily for the manufacturing industries, much of the information is applicable to non-manufacturing industries and to those performing industrial operations, such as railroads and ship operators. Insurance engineers are said to find it a prolific source of informaton. The 14 major subjects covered in the manual are as follows: plant design and layout; construction and demolition; permanent handling and storage; electrical hazards; chemical hazards; fire and explosion hazards; flammable liquids; hand and portable power tools; commercial vehicle operation; personal protective equipment; industrial hygiene; and safety organizations and programs.

The manual is available to both members and non-members of the Council.

"Pittsburgh Color Dynamics." How the scientific use of the energy in color is currently employed in the nation's plants and factories to increase overall efficiency is shown graphically in a full-color 32-page booklet now being published by the Pittsburgh Plate Glass Company. With facts and figures, plus numerous views of the actual use of color in manufacturing and processing plants, the booklet demonstrates how industrial officials, by following the principles of color dynamics, can (1) promote continuity of employment, (2) improve efficiency of operation, and (3) maintain quality of production. It reveals how dynamic colors will bring about more and better work per man-hour and more man-hours per man by making the employee's working environment cheerful and safe.

In a special section, the booklet outlines the scientific facts about color. Individual sections are devoted to the use of color on machinery and equipment; on walls and ceilings; and on floors, aisles, and mobile equipment, with emphasis on color for safety. Each section is illustrated with full-color applications. A special section contains simplified and practical material specifications for industrial painting.

Copies of the booklet may be obtained free of charge from Dept. NIB, Public Relations Department, Pittsburgh Plate Glass Co., 632 Duquesne Way, Pittsburgh 22, Pennsylvania.

"American Air Filters in Industry," a 23-page illustrated booklet compiled by the American Air Filter Co., 215 Central Ave., Louisville 8, Ky., discusses various types of industrial dust problems and typical applications of AAF air filters to such problems. Included in the booklet are a chart of size and characteristics of air-borne solids and sections dealing with atmospheric dust and filtered air for industrial air conditioning, industrial ventilation, drying operations, product finishing, control of bacteria and mold spores, cooling electrical equipment, engines and compressors, and miscellaneous industrial applications. Copy free upon request.

"Paint Engineering," a service which is designed to help all industrial users of paint or operators of coating lines, is the subject of an eight-page booklet now being offered by Bradley Paint Engineers, Inc., 311 Jones Law Bldg., Pittsburgh 19, Pa. The booklet contains a complete description of the service and the facilities of Bradley for manufacturing a wide line of standard industrial maintenance paints and product coatings for all industries. Copy free upon request.

"Bonderizing," a treatment for metals which is said to preserve fine finishes by anchoring the paint and retarding corrosion, is the subject of a 44-page catalog now being distributed by the Parker Rust Proof Co., 2172 E. Milwaukee Ave., Detroit 11, Mich. The catalog contains considerable information on the Bonderizing process and its application to steel, aluminum, zinc and their alloys, and die castings, as well as on Bonderite as an aid in the deep drawing of steel and aluminum.

The catalog is profusely illustrated, including pictures of test panels showing accelerated and weathering tests on treated and untreated metals. Typical Bonderizing installations are shown, with discussions provided of the most efficient use for various types of production. Copy of the catalog is available free to interested manufacturers addressing requests on their company letterheads.

"American Standards." A list of 864 standards approved for national use of industry by the American Standards Association has been prepared by the association. The revised list of standards includes many of those developed under war procedure and now approved for peacetime use, and is being made available to interested trade, technical, and governmental bodies and individuals without charge.

The standards listed include definitions of technical terms, specifications for metals and other materials, methods of work, and methods of test for finished products. They reach into every important engineering field and also include standards dealing with public and industrial safety, industrial medicine, and a wide variety of consumer goods. Copy of "American Standards" 4701 giving list prices of the various standards is available by writing to the American Standards Association, 70 E. 45th St., New York 17, New York.

"Over Ruts and Holes" is the title of a 12-page folder published by the Stonhard Co., 403 N. Broad St., Philadelphia 8, Pa., outlining the overlaying or patching of industrial concrete, wood, brick, and composition floors with Stonhard Resurfacer. The folder covers product uses, advantages, method of application, material coverages, and so on. In addition, several typical finished installations on traffic aisles, floors, platforms, and outside ramps are described and illustrated. Copy free upon request.

"Parlon," a chlorinated rubber for use in the production of finishes, is the subject of a 32-page technical booklet issued by the Hercules Powder Co., Inc., Wilmington, Del. The booklet contains many new starting formulations, as well as the results of long-time exposure tests of Parlon finishes. It is divided into two sections—properties and uses. Parlon finishes discussed include alkyd enamels; finishes for alkaline surfaces; paints resistant to chemicals; varnishes; traffic paints; furniture finishes; marine finishes; and emulsion paints. Copy of booklet free upon request.

B. F. Goodrich Industrial Protective Clothing is the subject of a 10-page catalog section published by The B. F. Goodrich Co., Akron, Ohio. The booklet tells of the new clothing which the company has introduced in recent months, pictures each garment, describes its functions in industry, and relates the method of construction and materials used to ensure maximum service. Copy of Catalog Section 12000 free upon request.

Oakite CrysCoat Process. Oakite Products, Inc., 20 Thames St., New York 6, N. Y., has published a six-page service report providing full particulars on the Oakite CrysCoat Process for precleaning, conditioning, and rust-inhibiting ferrous metal surfaces prior to organic finishing. The report tells how the process, employing an acid-type material specially designed for use in pressure-spray metal-washing machines, facilitates the preparation of ferrous metal surfaces for the improved adhesion of paint, lacquer, enamel, and varnish coatings. It provides data on methods of application, working concentration, pH determination and rinsing procedures, recommended operating temperatures, helpful production suggestions, and so on. Copy free.

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Speed and quality in grinding flat surfaces of metal, wood, hard rubber, celluloid and plastics. Obtainable in both vertical and horizontal types—9", 14", 20" sizes.

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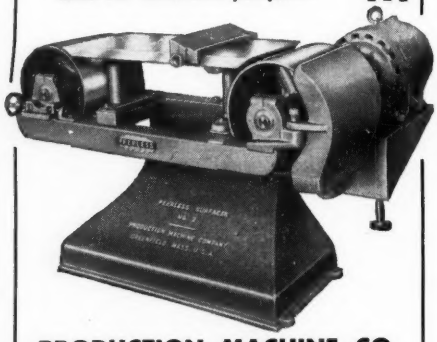

PRODUCTION MACHINE CO.
GREENFIELD • MASS.

Standard Prufcoat Application Specifications. A specification sheet presenting approved methods for corrosion-proofing metal and masonry surfaces with Prufcoat Protective Coatings is now being distributed by Prufcoat Laboratories, Inc., 63 Main St., Cambridge 42, Mass. Of special interest to maintenance, chemical process, and construction engineers, the specification sheet provides detailed information concerning the preparation of metal and masonry surfaces (floors, walls, structural steel, pipes, tanks, ducts, machinery, and equipment) as well as the application of Prufcoat Protective Coatings. Copy free upon request.

"Organic Nitrogen Compounds" is the title of a 31-page booklet published by the Carbide and Carbon Chemicals Corp., 30 E. 42nd St., New York 17, N. Y. The booklet presents in detail the properties, specifications, and uses of the alkyl amines, alkanolamines, alkylene amines, and acetoacetarylamides. In chart form, it gives their physical constants, comparative hygroscopicities, and neutralization curves. These compounds are used by various industries for purposes such as emulsifying, neutralizing, synthesizing, dissolving, and saponifying.

Copy of the booklet is available free by requesting Form 4770.

ACP Technical Service Data Sheets. A set of new and revised technical service data sheets on several of its products for the metal-finishing industry is now available free from the American Chemical Paint Co., Ambler, Pa. The set includes sheets on "Alodine," a chemical for producing a protective skinlike coating on aluminum and its alloys; "Kemick," a heat-resisting paint for protecting hot metal surfaces at temperatures up to and above 600 deg. F.; "Clorodine," an inhibited muriatic acid solution for removing rust, calcium carbonate, and sulfate from ferrous surfaces; "Cuprodizing" Stainless Steels; "Thermoil-Granodine," a phosphate chemical coating used in an immersion process to produce a dense, crystalline coating of iron and maganese phosphate on ferrous surfaces; "Ridoxine" No. 4, a liquid used to treat metal for the purpose of changing the composition of scale formed in heat treatment to allow for faster pickling or sandblasting; analysis and replenishing of the Alodine bath; testing the Thermoil-Granodine bath; suggested final treatments for Thermoil-Granodized surfaces.

Black Coatings. A comprehensive 20-page bulletin dealing with the properties and application of a complete line of black coatings is now being offered by the Hilo Varnish Corp., 60 Stewart Ave., Brooklyn 6, N. Y. Described are enamels, air dry and baking synthetics, japans, lacquers, crystal and Rip-pl finishes. Copy of Bulletin 1 free upon request.

Behr-Manning Cut-to-Length Flock. The Behr-Manning Corp., Troy, N. Y., announces the availability of a booklet containing 24 color samples of cut-to-length rayon flock, as well as complete information on methods of coating with flock, functional and decorative uses of flock, adhesives, engineering service, and so on. Copy free upon request.

"Iridite—The Quick Dip Process" for corrosion resistance as a paint base or final finish on all zinc or cadmium surfaces is the subject of a four-page folder published by Rheem Research Products, Inc., 4004 E. Monument St., Baltimore 5, Md. The folder provides a description of Iridite, where it is used, how it is applied, its cost, color and other physical properties. Copy free upon request.

"Materials of Chemical Construction" is the title of a 16-page bulletin prepared by The Atlas Mineral Products Co., Merztown, Pa., which illustrates and describes acid-proof cements, plastic linings, jointing materials, and protective coatings. A table listing physical properties of Atlas cements and compounds, a page of estimating data, and an index to materials of chemical construction are included in the bulletin, copy of which is available free upon request.

AristoCraft Power Tools. Aristo Power Tools, Inc., 601 W. Washington Blvd., Chicago 6, Ill., has published a 36-page catalog which fully illustrates and describes its line of AristoCraft power tools, including bench grinders, pedestal grinders, buffers and polishers, flexible shaft equipment, power discs, brushes, air guns blowers, and so on. The facilities of the company for performing the various operations in the construction of the above mentioned tools are also illustrated and discussed in the catalog, copy of which is available free to mechanical executives addressing requests on their company letterheads.

M.S.A. Fulface Dust Mask is the subject of Bulletin No. CR-19 now available free from the Mine Safety Appliances Co., Braddock, Thomas and Meade Sts., Pittsburgh 8, Pennslyvania.

"Scotch" Tapes for masking, protecting, holding, sealing, reinforcing, sandblasting, splicing, and identifying purposes are the subject of a 28-page catalog published by the Minnesota Mining and Manufacturing Co., 900 Fauquier Ave., St. Paul 6, Minn. The use of the tapes in the various operations mentioned above is fully illustrated and described. Copy free upon request.

Roto-Finish Mechanical Finishing of metal parts is illustrated and described in an attractive two-color folder published by The Sturgis Products Co., Dept. PF, Sturgis, Mich. The folder illustrates the different types of metal stampings, die castings, and other parts and products most conducive to mechanical finishing by Roto-Finish. The complete line of Roto-Finish machinery and equipment is also shown and described. Copy free upon request.

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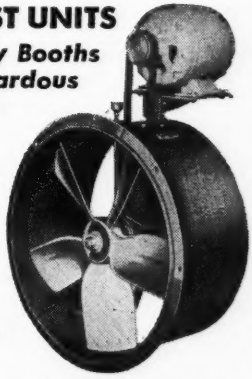

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